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Editorial
Special Issue on Research Impact in Education

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Amid increased calls for research use in education policy and practice are increased calls for researchers and their research to have impact—an issue experienced globally. After several decades of the study of research use and knowledge utilization, there is a shift in how education research is talked about, and, increasingly, how its evaluation is considered. Motivated by observations of this shift and the recent emergence of research impact in the context of U.S. education, this special issue focuses on scholarship that advances thinking about research impact both conceptually—in the presentation of frameworks and strategies—and empirically—through case studies across multiple contexts.

The first piece in the collection is an editorial monograph, "Wordplay or Paradigm Shift: The Meaning of 'Research Impact'," that draws on the testimony of thought leaders in the U.S. education system, offering a conceptual frame for the issue and highlighting several themes and tensions associated with research impact. These issues were front and center in the call for proposals and are addressed in the collection of articles that constitute this special issue.

A conceptualization of what it means for research to have impact

Across this volume, impact is taken up in different ways, from changes in policy and practice to changes in student outcomes. In "Exploring Teachers' Conceptual Uses of Research as Part of the Development and Scale Up of Research-Informed Practices," **Jane Flood** and **Chris Brown** describe an intervention aimed at creating research-informed teaching practice. This study offers evidence of how research can impact prac-

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tice through multiple case studies, and also how research-informed teaching may impact students. In "Mediated, Evidence-Informed Practice as Impact," **Joel Malin** offers professional use as a way of thinking about impact, drawing on the work of Edutopia, a widely known and influential education intermediary in the U.S. Utilizing survey data from Edutopia, he links educator responses to different conceptualizations of research use and resulting reported changes in practice, which he argues is high up on the hierarchy of sought-after impact. **Amanda Cooper**, **Samantha Shewchuk**, and **Stephen MacGregor**'s article, entitled "A Developmental Evaluation of Research-Practice Partnerships and Their Impacts," offers a deep dive into multiple evaluation frameworks for Research-Practice Partnerships (RPPs), an increasingly popular strategy for research impact. Drawing on the literature, document analysis, and interviews from four cases, the authors consider metrics for and dimensions of impact in partnership work. Perhaps not surprisingly, findings surface diverse conceptualizations of impact both within and across RPPs, including differences among stakeholders.

The research that is intended to have impact

Centered in this issue is a particular form of knowledge, research evidence, with the goal of understanding how this type of knowledge can impact educational outcomes. Most of the articles featured here attend specifically to research evidence: Flood and Brown document engagement with research literature in the design of practices; and, **Stephen MacGregor** and **David Phipps**, in "A Networked Approach to Research Impact," examine a network focused on the mobilization of research knowledge from universities via the case of Research Impact Canada. However, this volume features alternative framings for knowledge that generates impact. For example, **Sofya Malik**'s multiple case studies of knowledge mobilization organizations in Ontario, featured in "Knowledge Mobilization for Impact," include those that promote practice-based knowledge, and Malin's case study of Edutopia is a rich example of the use of integrated research and practice-based knowledge, a signature feature of that intermediary's work. These cases can help to extend thinking about research impact by situating research among many types of information or knowledge that support policy and practice.

How research impact is operationalized and observed

The theme of measurement occurs across all studies. Malik, for example, finds that impact is a consistent struggle across cases, with organizations identifying conceptual, measurement, and logistical challenges capturing whether or not their efforts generated intended changes. As a result, impact is most often a measure of outputs. Similarly, Cooper and colleagues find 123 metrics or indicators used to capture a wide range of the dimensions of impact in partnership work. Others, such as Malin and MacGregor and Phipps, utilize self-reported measures to capture varied aspects of impact, acknowledging the value of this approach for some but not all aspects of impact. In addition to method, however, the collection also acknowledges that the observation of impact is complicated by the varied ways in which impact might be conceptualized, which links back to the first theme. In particular, the differences between instrumental and conceptual use, described in several manuscripts, including Flood and Brown and Malin, raise challenges for observing and capturing research impact.

What conditions contribute to impact (or the lack thereof)?

This collection addresses a wide range of factors. MacGregor and Phipps tackle this issue directly, focusing on capacity building within higher education institutions in the Research Impact Canada network. They provide a rich case study evaluation of this multi-institution network, offering lessons about the impact of network learning on knowledge mobilization practice and also about the ways in which impact-focused missions are manifested in roles and systems in diverse institutions. Here, impact is a long game with significant institutional investment in capacity building toward this end. Moving to the micro level, Flood and Brown's work with classroom educators with a specific research use intervention highlights a different set of capacity-building activities anchored in theories of action and engaging with local conditions and needs. Others provide insight related to stakeholders. For example, Cooper and colleagues discuss impact in the context of multi-stakeholder RPPs.

Taken together, these articles offer a wide range of perspectives, creating an opportunity to reflect on what is being learned from these varied contexts and projects, and to inform the growing dialogue about research impact in the context of education. Further, as an open access journal, we hope that this special issue, and others to come, creates an opportunity for the sharing of ideas across research, policy, and practice boundaries, and engagement in dialogue about the role of research in strengthening educational opportunities and outcomes in the years to come.

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Wordplay or Paradigm Shift: The Meaning of "Research Impact"

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Abstract

Research impact is increasingly a global issue, yet it is still emerging in the context of U.S. education. This article synthesizes insights on this issue from key thought leaders in various roles in the U.S. education system, including their perspectives on defining, motivating, measuring, and supporting research impact. These insights offer the conceptual framing for this special issue of the *International Journal of Education Policy and Leadership* (*IJEPL*) and highlight several themes and tensions associated with research impact. The call for articles focused on these insights, which are addressed in the pieces that constitute this special issue.

Keywords: Research impact; Knowledge utilization

Introduction

In her piece *Knowledge Utility: From Social Relevance to Knowledge Mobilization*, Judith Naidorf (2014) astutely acknowledges and problematizes a shift in language in the discourse of higher education, referencing terms such as social relevance, innovation, and research impact. She argues:

> At first glance these words may appear neutral, simple and free from conflicts of interest. However, I argue that each of them requires deeper analysis, not only among them, but especially in relation to current scientific and university public policies, as the use of the

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> concepts have consequences and/or impacts both at the institutional level (higher education institutions) and actor level (scholars, project managers, etc.) (p. 3).

Further, she argues that different language is associated with different expectations and demands for the production and use of research (Naidorf, 2014). Sharing this concern, this introductory commentary—and the special issue that follows—seeks to unpack the language of research impact by offering conceptual and empirical accounts in the context of education. It starts with the emergence of the concept globally. Then, acknowledging its recent emergence in the United States, gathers the perspectives of key leaders in order to identify important considerations as the concept begins to take root.

Global research impact

In this special issue, the field of evidence use is contrasted with contemporary conceptualizations of "research impact," which, in a review of the work to date, draws heavily on the U.K.-developed Research Excellence Framework (REF) carried out by higher education funding organizations. The REF defines research impact as "an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia" (Research England, n.d.). Research impact is concerned with the impact of scholarly work on broader society, reflecting a narrower conceptualization of evidence guiding policy and practice, and a focus on the outcome of use as being observable influence or change. Discussion and debate about research impact have greatly increased internationally. This is reflected in the work of 1) research funders (e.g., the Australian Research Council's Engagement and Impact Consultation (Australian Research Council, n.d.), the REF process in the U.K. (Research Excellence Framework, n.d.); 2) research organizations (e.g., the U.K. Research and Innovation's research councils initiative (UK Research and Innovation, n.d.), Research Impact Canada (Research Impact Canada, n.d.); and 3) professional bodies (e.g., the British Academy (British Academy, n.d.), the American Educational Research Association, (American Educational Research Association, n.d.). As the Organization for Economic Co-operation and Development (OECD, 2011) noted some years ago: "Public research organizations are increasingly aware that they must demonstrate performance, impact and quality to their parent funding bodies, to their private clients and to the international research community" (Barker & Cox, p. 1).

Impact can be understood in multiple ways, which may broadly include *academic* and *societal*. Academic impact includes advancing scientific knowledge, methods, or theory within or across fields of study—which can be thought of as occurring *within* the academy. But societal impact is much broader and transcends the silos of academia. Examples of societal impact include contributions to culture, economy, the environment, policy, social change, law, technological development, and more, and as one might expect, the nature of the impact depends on the nature of the research conducted.

This concern for research impact is reflected in numerous reports and syntheses (Bastow, Dunleavy, & Tinker, 2014; Duryea, Hochman, & Parfitt, 2007; Edwards &

Meagher, 2019; Grant, 2006; Grant, Brutscher, Kirk, Butler, & Wooding, 2010; Greenhalgh, Raftery, Hanney, & Glover; Jones, Castle-Clarke, Manville, Gunashekar, & Grant, 2013; Kostoff & And, 1994; Morton, 2015a; Morton, 2015b; Oancea, 2013; Pederson, Grønvad, & Hvidtfeldt, 2020; Penfield, Baker, Wykes, & Scoble, 2014; Walter, Nutley, & Davies, 2003). In the U.S., however, the conversation around impact is much more recent. There has been significant attention paid to connecting research to practice in education as a result of accountability policy and related legislation, such as the *Education Sciences Reform Act*. But more typically, the discourse has involved "research use" or "evidence-based" frames rather than "research impact." As the language shifts, however, there is a need to surface current thinking about the term *research impact* and its implications, particularly in the U.S., and particularly in education, where there is an opportunity to shape its use and meaning.

Insights from key leaders in the U.S.

What does research impact mean in these contexts? The input of six key thought leaders in U.S. education—leaders of government agencies, funding organizations, institutions of higher education, innovative programs, research-practice partnerships, and professional associations—was sought to answer this question. They were selected because they are positioned to be influential in how others think about research impact. They are not representative of the field, but they are able to provide insight about both the larger issues regarding the role of research in education policy and practice, and the directions future efforts might take. To keep the dialogue as open and forthright as possible, they were assured their comments would be kept anonymous. The questions around which the conversations centered were:

- What does research impact mean to you and your organization?
- Why is research impact important to you and your organization?
- How do you/would you measure or capture research impact?
- How do you/would you support research impact?
- Do you see research impact as different from research use?

The researcher took notes and wrote reflective memos to capture the tensions, new ideas, and nuances in the conversation, as well as comparisons to other responses. The following emergent themes are important to consider when contemplating the relationship between research, practice, and the language of impact.

Is research impact different than research use?

Nearly every respondent believed that *impact* is meaningfully different than *use*, and, interestingly, they often conceptualized the relationship between impact and use in some metaphorical way. One conceptualization, for example, is *research use* as a tent, with research impact a specific form of use. An alternative conceptualization was as a sort of logical chain, where impact was an outcome of research use. That is, for research to have an impact, it must first be used (which in turn has its own precursors). Use, in and of itself, does not necessarily indicate impact, and many other factors influence decisions and may carry more weight as some suggest they should, given the political and democratic nature of education.

Notably, descriptions of research impact seemed to focus on instrumental use: a specific change or decision resulting from the use of research. As such, research impact is generally perceived as narrower than use.

However, one respondent remarked that use and impact might be the same in their context; the people they work with do not appear to distinguish between the two. In that case, impact could be understood in much the same way as research use: conceptual, instrumental, symbolic, and otherwise. One commenter suggested, for example, that impact might look more like "planting a seed." And while they were the only person to articulate this, the boundaries of impact versus use were far blurrier when the respondents were not speaking directly to the differences between the two terms. For example, respondents' language began with "impact" but often drifted to other descriptions, such as "influential," suggesting gradations of impact that felt closer to debates about "use."

The differences between research impact and use articulated in these conversations reflect an important tension. On one hand, participants suggested meaningful differences between the terms—terms that may hold the power to shape research policy, and subsequently the work of researchers in ways that may not be welcome by the community (by, for example, narrowing funding and privileging particular forms of research). On the other hand, the participants revealed a shared desire for research to be useful and to positively shape decisions about education, although often in ways that may extend beyond instrumental impact. The tension between simultaneously wanting impact and being wary of what that means in policy and practice is not easily resolved.

Layers of motivation

Motivation for impact was a point of convergence in the conversations with thought leaders. All the respondents agreed that impact is important, and they offered largely similar reasons: education is important for children and for society, and research can help us improve education opportunities and outcomes. But a closer review of comments yielded important nuances that may be useful for informing the dialogue.

First, while leaders may value research impact for its promise to improve *education*, the reality is that impact was more often talked about in terms of decisions or policies; in other words, impact was defined as shaping the outcome of a *decision*. Across conversations with the six thought leaders, participants described a complex chain implied in impact: Research may influence the outcome of a decision and the decision must be implemented, a process that is heavily influenced by context, and may not lead to the intended outcome in spite of research use.

So, there appears to be a disconnect between what the field wants research impact to mean (improving educational outcomes) and what research impact actually means (influencing decisions). There are indeed models where impact continues throughout the implementation of research and its outcomes, such as in some forms of research-practice partnerships (RPPs). In fact, one contributing thought leader stated that those who enter into RPPs do so specifically to have that kind of impact. Nonetheless, it is important to note the disconnect between claims about why research matters and what it actually matters for.

Further, impact matters to different parts of the education system in different ways. It might matter in the short or long term, for example. As one respondent pointed out, they may need to show impact in order to "keep the lights on," while someone else may be looking over the scope of their career to see if they made a difference in a particular school community. As one respondent put it, there are "layers" of motivation that make research matter. Self-interest is one, though it need not be as reprehensible as it sounds. Employment and organizational sustainability may depend (to varying degrees) on whether or not research has impact, a layer of accountability now widely experienced in the U.K. As the idea of research impact grows roots, it is important to recognize that how we think about impact and how we measure it are critically important in understanding our own accountability.

Additionally, the *what* of research impact matters. At various points in the conversations with respondents, the focus shifted from a *study* to a *body of research* to a *career* (or *researcher*), and more. If research impact matters, both at the level of society and potentially for individuals, a very frank conversation about how to define research is warranted. Some of the leaders expressed outright concern that no single study should ever impact policy or practice, but rather that a longer-term accumulation of knowledge can produce change. In contrast, others spoke of how a particular piece of research could potentially change how a school operated. This tension has critical implications for our expectations—as individuals, organizations, and research communities—of impact.

Lastly, it is important to acknowledge that research impact can be motivated by social justice, a notion not often acknowledged in the larger research use space. As articulated by one of the leaders: Research is about understanding, improving, changing. If people were not concerned with research impact, it could be considered implicit acknowledgement that the status quo is acceptable. In this sense, research impact is motivated by the need for social change and a recognition of education's failure to serve all children.

The question of motivation—why people care about research impact—is complicated. But it was also widely agreed upon by respondents. In this light, it is easy to understand how the idea has crept into the dialogue. However, the range of motivations and potential disconnects noted above matter when it comes to how impact is measured and supported.

Is research impact observable?

The participating thought leaders were asked if research impact is observable. As with the importance of impact, this was a point of convergence: all respondents agreed that research impact is observable and that a number of methods are available to capture it. Convergence, however, ended there, which aligns with recent reviews of impact in the literature (Pederson et al., 2020).

Respondents' perspectives on how impact might be measured varied widely. There is an argument that impact in and of itself implies causality, and that impact can really only be captured through methods suited to causal inference. This, however, is regarded as challenging at best, in no small part because of the absence of a counterfactual: If research was not introduced, would the decision have been differ-

ent? Given the highly situated, accreting nature of decision-making and the overwhelming belief of the importance of research relevance to use, it is hard to imagine estimating a counterfactual except in the rare conditions of, for example, information interventions delivered in an experimental format.

But less rigorous evaluation methods were noted and, accordingly, acknowledged as problematic. References to research or explicit citations in decision-making or policy were suggested, but as one respondent noted, "90 percent of what we use, you will never know we used." In other words, citations may indicate impact, but the absence of them does not mean the opposite, leading to inestimable false negatives.

In spite of repeated concerns, two lines of thinking emerged as promising. First, there appeared to be a natural sequencing of indicators that deserves attention. For research to have impact, it must first be seen, read, or otherwise engaged with; prior to that it must be accessed; and prior to that it must be made accessible. Therefore, although there is a set of highly imperfect measures of impact, there may be indicators that help us move through that initial sequence. For example, publishing in a journal or a magazine or any other location is a far cry from use, but if research is not made available, it cannot be consumed. Further, citation rates or downloads or views—also acknowledged as imperfect—mean that someone is accessing the research. This approach to measurement, however, demands a well thought-out (ideally, well researched) logic model with corresponding indicators at each point, from inputs to outputs to short- and long-term outcomes—what Dan Goldhaber (2018) refers to as deathbed impact. However, none of the participating thought leaders referred to any such tool guiding their thinking or their work.

Measurement of research use and research impact will always be challenging. Measures of impact emerging in the U.K. and elsewhere in response to accountability requirements for impact are widely debated as well (see Buchanan, 2013; Chowdhury, Koya, & Philipson, 2016; Edwards & Meagher, 2019; Grant et al., 2010; Pederson et al., 2020). But ideas about how to do this, albeit imperfectly, abound.

Making impact happen

A number of strategies and conditions were woven through the conversations with thought leaders, many of which prompted thinking in different and more nuanced ways—beyond the barriers and facilitators long documented in the research use literature. The discussion below starts from the premise that if we believe research impact is important (and all participants did, to varying degrees and for various reasons), then there must be efforts in place to support it. This was true in some places and less so in others. For example, the head of one federal funding agency articulated a three-pronged approach to helping the research it funds to have impact, while another admitted that the higher education institution they work for has not quite figured it out in the context of a traditional academic rewards system (not for lack of trying, they noted). Conversations about conditions highlighted five broad ways of thinking: relevance, objectivity, rewards, capacity building, and accessibility.

Relevance. The relevance of research to the problems decision-makers face emerged in a multitude of ways: through political salience, content focus, the source, and directionality. One respondent recalled a framework suggesting the likelihood

of research impact was contingent on a combination of political salience and uncertainty, noting relevance has a political element, reminiscent of Kingdon's policy windows (Kingdon & Stano, 1984). The head of one state education agency's (SEA) research and evaluation units articulated that research has to "scratch the current itch" to be helpful, denoting a content relevance, and it exerts significant effort curating research that could inform current department initiatives. It might also produce research evidence directly. The idea of producing research to inform a specific decision, often in response to a request for it, is a third way of ensuring relevance. This happens in state and local education agencies (SEAs and LEAs), but also in programs that embed researchers and data scientists in agencies and in RPPs. As one respondent explained, it almost *guarantees* impact. The fourth version of relevance raises the issue of directionality in connections between research and practice. Questions driven from knowledge about policy and practice (practice to research, or P to R) increase the likelihood of relevance, and as one participant put it, practitioners and policymakers define the problems for themselves, often in ways that are not attractive to researchers (are "unsexy," as the participant stated). This framing of relevance begs the question of whether dominant conceptualizations of research informing practice are misguided, or at least capture only half of the equation. It raises the question of whether a P-R-P framework should guide research impact.

Objectivity. Related to relevance, the characterization of research as "objective" was common. This includes scholars seeking to be viewed as objective, neutral sources of information for policymakers, as well as funders seeking to ensure they are not perceived as promoting an agenda. The assumption of research or researcher neutrality was strong in some conversations, while others implied that ideology can be a driver of research and that research can (appropriately or otherwise) be invoked for the justification of policy choices, requiring users to be critical, if not skeptical, in their engagement with research. Thus, conversations revealed a tension between being able to *trust* research and/or researchers and the need to be *critical*, a tension with important implications for relationships among research, policy, and practice.

Rewards. Incentivizing research impact also arose in multiple conversations, most often in the form of recognizing that traditional academic rewards systems do not explicitly value research impact beyond the academy. In promotion and tenure processes, impact is often guided by metrics such as citations and related indices, which, as noted above, may be at least partially useful in understanding impact more broadly. But in the absence of a more explicit recognition of impact, higher education incentives drive article production and related behaviors. An alternative incentive is funding, which is often necessary to sustain research agendas and careers but is also frequently recognized as important for career advancement (including promotion and tenure decisions in higher education). Funding, therefore, could be a lever for increasing impact. One of the explicit strategies identified by the leader of a federal funding agency included setting a funding agenda on a) issues of practical and policy relevance, and b) ensuring that the plan included dissemination efforts likely to promote impact.

Capacity building. The discussion of rewards, however, was generally focused on incentives for researchers. There was no mention of rewarding policymakers or practitioners for making decisions based on research. In contrast, the idea of building

capacity for both researchers and decision-makers emerged at multiple points. The respondent from an SEA, for example, has a direct approach to training district and school leaders as well as SEA staff on "critically consuming" research, which in turn, increases the opportunity for research impact. Another respondent, a policy researcher, acknowledged that through their teaching and mentorship, they may be shaping the next generation of policymakers and practitioners, and that their availability and accessibility can help create conditions for greater research impact in the future. Other efforts to build capacity among researchers engage with practitioners and policymakers in the hopes of increasing research relevance and building the skills to span research/practice boundaries in their future roles.

Visibility and accessibility. Visibility and accessibility emerged as related themes in conversations. Visibility relates to both the research and the message about the value of research impact. The participating dean highlighted the bully pulpit as a tool to reinforce their institution's commitment to research impact, signaling the importance of leadership in advancing a culture of research impact. Other efforts mentioned above, such as the inclusion of particular dissemination requirements for funders and programs that embed researchers in policy and practice environments, also send strong signals about what these institutions value, and they may ultimately elevate the visibility of research impact in the education ecosystem.

An alternative perspective on visibility is more closely tied to accessibility. From this perspective, there is concern regarding the extent to which the research and researcher are visible or accessible to decision-makers, as well as the extent to which the relevant problem and the decision-makers are visible or accessible to the researcher. As noted above, research accessibility is among the precursors for research impact. If the relevant research never reaches the decision-maker's desk, it cannot be part of their decision-making. This means that research and researchers themselves, since there is strong evidence suggesting that research use is about relationships (e.g., Backer, Liberman, & Kuehnel, 1986; Coburn & Stein, 2010; Cousins & Simon, 1996; Honig & Venkateswaran, 2012; Huberman, 1990; Landry, Amara, & Lamari, 2001; Lavis, Robertson, Woodside, McLeod, & Abelson, 2003), must be both visible and accessible. One researcher seeks out opportunities to contribute to organizations such as National Public Radio, not simply to make people aware of the research but to establish himself and his work as trustworthy and accessible. There were no mentions, however, of strategies to make problems or decision-makers more visible or accessible to researchers; all the examples provided by respondents involve researchers reaching out or embedding themselves in policy or practice. This reinforces the need to address directionality in the ecosystem and suggests a need to create supports or opportunities at scale to make the needs of policymakers and practitioners more visible.

The bigger picture

These themes highlight the complexity of research impact, from language to measurement to supports. In many ways they reflect the tensions experienced by scholars in countries where research impact is already part of the discourse, and in other ways they reflect the diffuse perspectives that might be expected from a context in

which the idea is merely emergent. They offer insight into how the concept might be understood but also remind us of the larger contextual issues in which this work is situated.

Emphasis on ecosystem. Evident throughout the conversations is the complexity of the research-policy and research-practice ecosystem. From the production of research to the context of implementation, a multitude of actors and institutions shape relationships between those communities, and, subsequently, the potential for research to have impact. Conceptualizations of impact, motivations for seeking impact, and approaches to measurement seem to vary by role in that ecosystem. And, of course, supporting conditions are needed across that ecosystem, not merely within research, policy, or practice communities. If, as some participating leaders suggested, research impact is valued across the system, then it is critical to understand how all of researchers' and practitioners' work is intertwined, to reflect on those roles, to develop shared understandings and common goals across communities, and to focus on aligning systems to achieve those goals.

Comparison to other contexts. The conversation about research impact in the U.S. is clearly still emerging; the current understanding of research impact is much closer to "use" than definitions taken up in assessment-driven systems (e.g., in the U.K.). In spite of research impact and research use being conceptualized as distinct, albeit in different ways, participating thought leaders used the terms almost interchangeably (with some important exceptions). This may mean that in spite of new language, there is less of a shift in thinking about the relationship between research and policy or practice than imagined. It may also mean that there is a need for greater dialogue among stakeholders about the language they use and what it means for collective and individual work, and that there is still an opportunity to think carefully about the discourse, measures, and purposes surrounding "research impact."

Accountability for impact. Relatedly, there is little formal *Accountability* in the U.S. education system for impact, but some degree of less formal *accountability*. Capital A Accountability refers to high-stakes scenarios such as institutional funding and employment, whereas lowercase a accountability refers to low-stakes instances such as self-worth. Research impact in the U.K., and increasingly elsewhere, is part of a larger Accountability framework for the research enterprise, though there was very little mention of higher-stakes decisions based on impact in the conversations with thought leaders. Most mentions were about lower-stakes decisions: funding particular projects, views about one's own contribution to the field, and a larger moral obligation to future generations. The distinction is notable. As has been dually noted here in the U.S., education Accountability has profound effects on how organizations operate. An Accountability framework featuring research impact would demand notably different metrics and supports than those described in the conversations referred to here, which were acknowledged as problematic and inadequate. This raises the possibility that a shift in language from research use to research impact reflects a shift in accountability from little a to big A. Absent is a much broader dialogue, and significant alignment throughout the ecosystem, this may be concerning.

Measurement matters. Measurement and observability are equally problematic here in the U.S. and in contexts where impact is part of larger Accountability policies.

As many scholars have noted (see Federation for the Humanities and Social Sciences, 2014; Grant et al., 2010; Pederson et al., 2020; Penfield et al., 2014), the idea of measuring and observing research impact is complex and varies across disciplines. Often the most feasible and simple metrics are least adequate to the task, and true impact is likely to demand significant time and expense. In this sense, disciplinary contexts are similar. In light of the caution about Accountability above, the inadequacy of measures may ultimately be consequential, as "what gets measured gets done." A natural implication could be the narrowing of the kind of research that is funded and that "counts" for promotion and tenure or other rewards, and that is ultimately available for policy and practice. In other words, this may mean the *commodification of research* (Radder, 2010). Under the guise of impact and relevance, a narrowing of the field would directly contradict the complexity of problems facing the educational system and limit innovation in both the research and practice spaces.

Reconsidering directionality. Imbalances in directionality persist in both research and practice spaces. The idea of research impact necessarily entails policymakers or practitioners using research to make decisions, but it also relies on assumptions of accessibility and relevance that are problematic and empirically questionable. In the conversations with thought leaders, the importance of the practice-to-research pipeline of ideas and needs was mentioned, but little attention was paid to how two-way interactions can be improved. This is often absent from the dialogue, and it is also absent from the dominant research impact frameworks in the U.K. Though research impact itself implies directionality, the supporting mechanisms demand two-way channels.

The path ahead: Contributions of this special issue

Given the increasing global attention paid to research impact, whether established or emergent, it is important to examine the concept and its applications in the context of education. The call for and selection of articles for this special issue was informed by both prior literature and the tensions that surfaced in the exploratory work presented above. The use of research evidence is widely recognized as important to the improvement of the educational system, and to improving opportunities and outcomes for students, families, and communities. However, the idea of "impact" remains opaque and controversial. The lessons described above suggest that impact is one way of thinking about use, whether consumed within use or an alternative form of use, and that impact might be defined as changing the outcome of a decision. It is hard, however, to document cases of research impact: to show evidence that it happened or how it happened, which David Pederson, Jonas Grønvad, and Rolf Hvidtfeldt (2020) directly acknowledge. The articles selected for publication in this issue attend to that gap, providing conceptual and empirical examinations of research impact that describe 1) what it means for research to have impact, 2) the research that is intended to have impact, 3) how research impact is operationalized and observed, and 4) what conditions contributed to impact (or a lack thereof). In the selection and publication of these articles, we hope to advance the dialogue about research impact and create an opportunity to proactively inform policies and practices surrounding research impact in the context of education, and in doing so, im-

prove the role of research in strengthening educational opportunities and outcomes in the years to come.

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Website

Center for Research Use in Education, www.research4schools.org

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Exploring Teachers' Conceptual Uses of Research as Part of the Development and Scale-Up of Research-Informed Practices

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Abstract

Research Informed Teaching Practice has become a fundamental aspect of educational reform in the modern world, aiding the development and improvement of teaching and learning, decision-making and the school improvement agenda in general. This article presents the findings from a small-scale study across three infant schools in England involving 15 teachers that found that teachers use of research tends to be conceptual in nature. RITP is achieved through an approach that can help teachers engage effectively with research evidence in order to adapt existing research/research-informed interventions to achieve the desired impact. The requirements for this type of conceptual research use tends to have a functional and measurable nature linked to continuous quality improvement.

Keywords: Research use; School improvement; Research informed

Introduction

This article examines the idea of research-informed teaching practice (RITP) and how it can be instigated in order to achieve the goals of improved teaching and learning. Since the groundbreaking work of Carol Weiss (1979) in the 1970s, approaches to using academic research to inform teachers' practices have invariably been categorized as having either instrumental or conceptual aims. The notion of instrumental research use suggests a direct link can occur between research findings and action;

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conceptual research use encapsulates the idea that research typically guides thinking and is considered in relation to other evidence and knowledge, which is often tacit and contextual in nature. Grounded in the argument that conceptual research use is more likely and realistic than instrumental research use, this article explores what can be learnt from a small-scale project designed to help teachers engage with and employ research in a conceptual way, so that this engagement measurably impacts on their practice and the outcomes of their students.

What is research-informed practice?

Matt Walker describes the notion of RITP (2017) as the process of teachers accessing, evaluating, and applying the findings of academic research in order to improve teaching and learning in their schools. RITP can be considered a fundamental aspect of educational reform in the modern age because it involves the examination and reexamination of practices in the light of information about those practices, and it is typically undertaken within a paradigm that privileges the pursuit of continuous improvement (Bauman, 2012; Giddens, 1990). It is no surprise, therefore, that, in what Zygmunt Bauman (2012) refers to as the "liquid modern world" (p. 64), RITP is an increasingly pivotal part of many recent policy initiatives by governments seeking to foster school improvement from the bottom-up or in ways that are self-improving (Greany, 2014). In this light, the expounded goals and outcomes expected of RITP typically include continuously improving school standards, adopting innovative approaches for delivering education, a 'future-proof" teaching workforce that works collaboratively to continuously improve through research and development activity, and school leavers with the skills required for the knowledge economy (Malouf & Taymans, 2016; Peurach, 2016; Walker, 2017).

How research-informed practice materializes in classrooms

Numerous studies and commentaries have examined how research evidence can affect practice (i.e., how teachers act after engaging with research). Probably the most commonly used theory of research utilization is Weiss' (1979) suggestion that research can be employed in either instrumental or conceptual ways[1] (e.g., Amara, Ouimet, & Landry, 2004; Ion & Iucu, 2014; Penuel, Davidson, Herlihy, Sherer, Hill, Farrell, & Allen, 2017; Rickinson, 2005). Carole Estabrooks (1999) explains these terms in the following way: instrumental research use is the use of research findings that are directly applied through decision-making or in terms of how a service is subsequently delivered. Conceptual use, meanwhile, refers to a cognitive process where research findings enlighten a person's perceptions or understanding and indirectly impacts on their decision-making. A similar distinction can be found in an article by Steve Makkar, Sue Brennan, Tari Turner, Anna Williamson, Sally Redman, and Sally Green (2016), which argues that research may directly steer decisions and actions (instrumental use) or provide new ideas, understanding, or concepts (conceptual use). Finally, Sandra Nutley, Isabel Walter, and Huw Davies (2009) refer to instrumental use as "the direct use of research in changing practice" and conceptual as "the indirect use of research in reshaping the ways people think about practice" (p. 553). Thus, instrumental use implies a *direct* translation from research to practice;

with prototypical examples including medical guidelines for washing hands and pro formas for checking the safety features of aircraft (e.g., see Michie, Johnston, Abraham, Lawton, Parker, & Walker, 2005). Conceptual use, meanwhile, corresponds to a more indirect influence, since research engagement serves to change the way a person views a problem or the possible solution spaces for a problem (Penuel et al., 2017).

These research-use typologies are interpreted here as dichotomous; because their academic progenitors chose to define them as separate entities, they should be treated as such. While other positions exist (i.e., that instrumental and conceptual uses represent the ends of a spectrum rather than classes of a concept), this was not the original intention of academics such as Weiss (1979). In particular, this is because Weiss (1979) defined a myriad of research-use types, not just the two "extremes" that are normally situated at each end of a range of options. This indicates that each use type was intended to be separate and should be regarded in that way. This is the position of this article.

As separate research-use types, the vital difference between instrumental and conceptual use would seem to be premised, therefore, on how educators are expected to engage with research vis-à-vis their decision-making and actions. Specifically, instrumental use is thought to involve a direct move from research to practice: a solution is identified, adopted, and then used. Ideally, such a solution would be an intervention shown by research to improve children's outcomes that can be implemented with fidelity. Through a conceptual-use lens, however, research evidence acts in a way analogous to a streetlight: it serves to illuminate or inform thinking in relation to a given problem and a solution to that problem. Numerous sources suggest, however, that pure instrumental research use is unrealistic. Notwithstanding the fact that a given evidence base relating to a problem of practice is likely to be insufficiently concrete to provide a definitive course of action (e.g., Biesta, 2007; Hammersley, 1997; Wisby & Whitty, 2017; Wrigley, 2018)—although this article focuses on an intervention where concrete evidence does exist, so this issue can be sidelined for now—teachers simply do not employ research in this way. For instance, Mike Coldwell, Toby Greany, Steve Higgins, Chris Brown, Bronwen Maxwell, Bernadette Stiell, Louise Stoll, Ben Willis, and Helen Burns (2017) note that there is "limited evidence from [their] study of teachers directly importing research findings to change their practice. Rather, research more typically informed their thinking and led—at least in the more engaged schools—to experimenting, testing out and trialing new approaches in more or less systematic ways" (p. ix). Virginie März and Geert Kelchtermans (2013), having examined the relationship between research and its implementation, also conclude that "teachers' practices are never simply a matter of executing prescriptions and procedures" (p. 13). Likewise, Eileen Gambrill (2010) reports that instrumental research use typically does not occur because teachers' decision-making processes are complex: they involve the synthesis of knowledge relating to not only local and individual characteristics but also values, preferences, and resources as well as the domain-specific knowledge associated with teaching. These ideas are also underpinned by constructivist/socio-cultural learning perspectives that flag the importance of participation in cultural (e.g., organizational) practices in de-

termining understanding (Paavola, Lipponen, & Hakkarainen, 2004). As such, research use in education can never be 100 percent instrumental and, correspondingly, RITP should be thought of as decision-making that encompasses a *combination* of knowledge types. This makes research use fundamentally conceptual in its nature but with the possible role of research in the decision-making process varying depending on certain factors, including its availability, its concreteness, presiding contextual factors, and the practical knowledge currently in play.

At the same time, as noted above, RITP activity is invariably required to have functional outcomes since there is an expectation that any engagement with research should lead to positive pedagogic change (e.g., changes in teacher understanding and/or practice), and, furthermore, that such changes should be beneficial for children and students. For instance, school improvement initiatives in this vein, typically driven by high-stakes accountability, often view RITP as comprising an iterative, evidence-based cycle of inquiry in which change agents identify needs, research/research-informed solutions, and metrics directly linked to improvements in specific practices (e.g., see Bryk, Gomez, Grunow, & LeMahieu, 2015). Here a theory of action connects a data-informed understanding of a problem to rapid cycles of research-informed change and evaluation (Mintrop & Zumpe, 2019). This idea of "continuous quality improvement," according to the principles of improvement science or design development (Bryk et al., 2015; Mintrop & Zumpe, 2019), thus calls for "tight 'means-ends' connections in which solutions are employed to address contextually diagnosed problems, and effectiveness is verified through practice-embedded metrics" (Mintrop & Zumpe, 2019, p. 297). Hand in hand with this functional perspective, therefore, is the expectation that the outcomes of RITPs should be measured to determine their effects.

At the same time, in order to provide "ready-made" solutions that can be drawn on as part of a process of continuous quality improvement, significant efforts have been made to provide an accessible research base on effective educational interventions (Malouf & Taymans, 2016). Examples of these efforts include the synthesis of existing research findings undertaken by organizations such as the Education Endowment Foundation in the U.K. and the Best Evidence Encyclopedia, the Campbell Collaboration, and the What Works Clearinghouse in North America. Underpinning the work of these organizations is the idea that effective practices identified by research both can and should be instrumentally replicated (i.e., scaled-up) by teachers and school leaders within and across schools. It is intended that such replication should occur first via engagement with this synthesized research base. Following this engagement, teachers should undertake specified actions or implement the specified programs highlighted by the engagement and do so with fidelity. At the same time, the world of education is full of examples of failed attempts to implement research-informed solutions (Dede, 2016).

Considering these functional/measurement-related requirements, the notable incidents of instrumental research-use replication "failure," plus the likely conceptual nature of research use—which is more nebulous than the instrumental research use typically envisaged within the continuous quality improvement paradigm—there is a gap in understanding regarding current approaches to helping teachers engage

with both research evidence and existing research-informed practice solutions. Specifically, there is a need to work within the notions of a policy paradigm of continuous quality improvement and an epistemological paradigm of conceptual research use to help teachers engage with research in a way that they can: 1) understand it; 2) relate it to their existing knowledge, practice, and context in order to ascertain the most effective way to make use of it (i.e., use it in a conceptual way); and 3) assess whether the use of research-informed practices is having the impact desired (i.e., measure its functional outcomes). There has not been substantive empirical investigation into how to support teachers to engage with research, to scale-up research-informed interventions, in ways that recognize that RITP is conceptual but also acknowledge a need to help teachers understand impact. There have, however, been calls to give such research more priority (e.g., Bryk, 2016), and interest in this area can now be seen across fields, such as implementation science and designed-based research (Bryk, 2016; Coburn, Penuel & Geil, 2013). In light of such calls, this article presents the findings of a small-scale research study designed to explore one specific approach to facilitating teachers' conceptual use of research as part of the development and enactment of RITP.

Learningfield Learning Federation: Seeking to become research engaged

The research setting for this article is the Learningfield Church of England Learning Federation. The federation represents a family of three small church infant schools based in Hampshire, U.K., in the villages of Fallowfield, Highfield, and Commonfield that all work closely together under the leadership of the federation headteacher and governing body. One of the federation's improvement plan objectives is for it to become a research-informed federation where schools collaboratively and rigorously evaluate the quality of the education they offer, explore what is needed to improve, take appropriate research-informed action, and engage in an effective evaluation of the impact of their actions. In other words, it is a stated aim of the federation's leadership to change the culture of its schools so that teachers' research use becomes something we do around here. To meet this objective, the executive headteacher of the federation devised a model of professional learning where, since 2016, four of the statutory staff professional-development days allocated to schools in England were dedicated solely to research-informed professional development. Using a cycle of enquiry approach, and in keeping with the functional requirements of RITP, the aim of the model was to enable teachers to work together to engage with research, to identify new practices, to trial these practices, to measure their impact, and then to roll out the most successful within and across the schools in the federation.

The first author of this article was asked to support the Learningfield process by facilitating each of the four one-day workshops and providing support to Learningfield's teachers to enable them to engage with pertinent high-quality research to develop RITP. The subject of the research was effective teacher-student feedback, chosen by the federation executive headteacher as a key area for improvement. The subject of teacher-student feedback also has a relatively concrete research base with which to engage teachers (e.g., see the Education Endowment Foundation's *Teaching*

and Learning toolkit or John Hattie's [2011] *Visible Learning*). To support the Learningfield process, and in keeping with the analysis above, the first author of this article engaged in three sets of activities. The first concerned the brokering of research to Learningfield's staff. Here research summaries were produced of extant and pertinent work on feedback (e.g., Flórez & Sammons, 2013; Hattie, 2011; Wiliam, Lee, Harrison, & Black, 2004). This work was synthesized using accessible language and with the nature of the theory of action for feedback: how and why effective feedback is supposed to make a difference to student outcomes. The second activity involved helping teachers involved in the project to use this research conceptually: use the research findings in conjunction with their teacher-held knowledge of effective feedback and also in relation to their understanding of their students and the wider context of their school. After they brought these two knowledge bases together, teachers were supported to develop, trial, and embed research-informed interventions that they believed would be most effective for their situation. The third and final activity was to help teachers judge the impact of their new practices.

To support the first set of activities, a review of extant high-quality research on teacher-student feedback (e.g., see references above such at the EEF's *Teaching and Learning Toolkit* and *Hattie's Visible Learning*) was produced. This research base was augmented with research on metacognition and growth mindsets, which were seen as both related and thematically appropriate. In keeping with the literature on effective knowledge brokering (e.g., Eco, 2014; Hubers, 2016; Morton & Seditas, 2016), the research review was designed to provide the following information:

- An outline of the available research into teacher-student feedback as well as how this research was conducted. A commentary on the strengths and weaknesses of the research base was also provided.
- Details on what current research says about the effectiveness of teacher-student feedback, which situations it is more or less effective in, and for whom.
- Details on researched approaches to teacher-student feedback and the thinking underpinning these uses (i.e., the theory of action for why feedback should improve teaching and learning).
- Details on how teacher-student feedback has been implemented, in what contexts, and for what reasons.

Care was taken to ensure the language used in the review was accessible and teacher-friendly (Cain, 2015). The first author of this article was on hand to answer questions and clarify areas of confusion. Furthermore, although (as noted earlier) the evidence base for this project was largely concrete in its conclusions and recommendations, any questions regarding potential conflict in the findings were discussed as a group and all the participants considered the implications.

In the second workshop of the cycle, participants were supported to develop interventions to improve existing approaches to teacher-student feedback; participants were required to ensure that their interventions were informed both by the research they engaged with in workshop one, their personal practice-based knowledge and experience, and/or the knowledge and experience of others. To aid this process, par-

ticipating teachers were introduced to the idea of theories of action (ToAs) and how ToAs can be used to construct research-informed interventions with clear pathways for change. Participants were then introduced to effective ways of trialing new innovations, such as lesson study, and left the workshop with the expectation that they should test their approach between workshops two and three (with the refinement and wider roll-out of their intervention occurring between workshops 3 and 4) (further detail on the types of activities covered in workshop two can be found in Brown (2017). Teachers were also supported to understand the impact of their actions and taught how to collect evidence related to their ToA and the desired changes they hoped to see. The research undertaken alongside these activities thus not only sought to explore if and how these activities helped participating teachers develop impactful research-informed interventions, it also draws on teachers' evidence of impact to assess the effect of the program on student outcomes. It was also intended that this research should provide insights and lessons into effective ways to facilitate RITP moving forward.

Research aims and questions

This study examines the extent to which the activities described above: 1) supported teachers to engage with educational research on effective feedback and related subject areas; 2) aided teachers to use this research to develop research-informed interventions for their classrooms with clearly defined pathways for change and impact; and 3) led to participants believing the strategies developed as a result of this model had an impact on teaching and learning. This article addresses three specific research questions:

- Research question 1: Did the activities help participants engage with the research in question and relate it to their context, setting, and area of practice?
- Research question 2: Did the activities help participants develop research-informed interventions with contextually specific pathways for change and impact?
- Research question 3: Did participants perceive that as a result of these activities, they were developing interventions that made a difference to teaching and learning? How and why?

A mixed-methods approach was employed to address these questions. Pre- and post-intervention surveys were conducted, and in-depth semi-structured interviews were conducted after the intervention to collect data.

It should be noted that the first author of this article both designed the intervention and conducted the evaluation. This raises a potential bias issue, however, the intention of the first author was to assess whether the evaluation was effective and, if not, how improvements could be made. The noteworthiness of the findings led to the writing of this article. Furthermore, the evaluation was based on data that teachers themselves were using to assess the effectiveness of their approaches; the fact that some teachers were more successful than others indicates that there was little if any social desirability bias in their responses, since their primary focus was the continued improvement of the new practices they had developed.

Analysis

A total of 15 teachers and school leaders (representing the whole of the federation's teaching staff) were interviewed in July 2017 a month after the final workshop. The characteristics of the respondents are set out in Table 1. In keeping with the work of Etienne Wenger, Beverly Trayner, and Maarten de Laat (2011), research respondents were asked to provide impact data relating to their interventions to help triangulate their responses and provide a level of objectivity to their accounts. Furthermore, the pre- and post-intervention surveys relating to the teachers' use of research provided further insight into respondents' perceptions relating to research use (surveys were undertaken before interviews were held). The questions from the survey, as well as the responses provided, are set out in Table 2.

Table 1: Characteristics of the interview respondents

Gender	14 female, 1 male
Average time in post	10.5 years
Average age bracket	41-46
Number with post-graduate qualifications (e.g., Master's degree, PhD, etc.)	5
Middle or senior leaders	6

Table 2: Pre- and post-survey questions and responses

Question*	Pre-response (average)	Post-response (average)	Difference (average)
1) How secure is your knowledge of research methods?	2.8	3.6	0.9
2) How confident are you relating academic research findings to your practice?	2.8	3.8	1
3) How confident are you having conversations about academic research?	2.9	3.8	0.9
4) How confident are you around interpreting academic research findings?	2.6	3.7	1.1
5) How secure are you using academic research to inform the design of teaching and learning strategies?	2.5	3.5	1

*Respondents were asked to rate their knowledge and skills against a five-point scale, with 5 equalling high, 3 equalling average, and 1 equalling low/none.

Interviews were recorded and transcribed. Data from the recordings were thematically analyzed in a process that also considered the impact and survey data. For each question, inductive analysis was initially used to provide a categorization of responses. Once all data was coded this way, meso-level codes were constructed to enable initial codes to be adequately explained in a conceptually meaningful way. This process was repeated using inductively developed macro-level codes to organize the meso-level codes (Lincoln & Guba, 1985). Macro-level codes were then assigned to each interview question.

Findings

The findings from the surveys and interviews are presented below, organized by research question. For the sake of brevity, only macro-level interview codes are provided (the titles of these codes are set in italics below.

Research question 1: Did the activities help participants engage with the research in question and relate it to their context, setting, and area of practice?

Research respondents observed that the activities used within the workshops helped them engage effectively with the literature in the following ways:

> 1. By *providing access to research*: "[in the past] that's the bit that I've found hardest with the inquiry, is accessing that kind of material … knowing more where to go and accessing [research evidence] … having access to that and time to read through things was really helpful" (Respondent #3).
>
> 2. By *having time to engage with research*. Similar comments about how the model provided time to engage with research included: "having those inset days made all the difference this year … [in the past] when we were trying to fit it in, sometimes it didn't happen, and we'd grab half an hour and it didn't have the momentum" (Respondent #3). (Respondents #5, #8, #9, #10, #13, and #14 also made similar points.)
>
> 3. Through the *collaborative, discursive nature of the activities*: "[when] everyone read a little bit and then fed back and discussed it, I found that a much easier way to engage with the research … to go through and talk about or to analyze together" (Respondent #2). "The communication and working as part of a team is important, if you can sit down with [research] and unpick [its meaning] together, I think that's better than trying to work in isolation" (Respondent #7). (Respondents #10, #11, #12, #13, and #14 made similar points.) Moreover, the *structured and facilitated approach to research engagement* meant that participants felt they were able to engage more meaningfully with the literature (this was mentioned by respondents #2, #5, #9, #13, and #14).
>
> 4. By making it clear respondents were *encouraged to experiment and take risks*: "I think for me, it was the knowledge that it was okay to get it wrong. That didn't matter, because it's not necessarily about finding the answer" (Respondent #6).

Recent literature on how school leaders can support a research-informed environment within their schools highlight the importance of: 1) providing the necessary resources and structures (for example, time, space, and access to research); and 2) facilitating an effective learning environment that includes collaborative dialogue and promoting trusting relations that enable innovation through risk-taking (e.g.,

Walker, 2017). The interview findings seem to add empirical weight to these suggestions. It has also been argued that effective engagement with research will require teachers to understand the strengths and limitations of different research methods, contextualize research findings, and engage in learning conversations using research as part of collaborative process of designing new teaching strategies (e.g., Cain, 2015). These three requirements are reflected in survey questions 1, 2, and 3 in Table 2. While not based on an experimental approach (i.e., there was no counterfactual data for teachers not participating in the project), the data from the surveys does provide promising indications that respondents typically believed that their knowledge and skills had improved over the course of the project in all three areas. Average scores moved from below the mid-point score of three, or average, at the start of the project to closer to four, or above average, by its end.

Learningfield Federation teachers were indeed becoming research informed as a result of the approach: "there is [now] evidence-informed professional conversation all the time. People have been far better about the idea of providing evidence for what they're saying" (Respondent #1). "[We're] actually beginning to embed the fact that everything we do, should actually be shrouded in research … and that's what we've got to continue doing" (Respondent #8).

Research question 2: Did the activities help participants develop research-informed interventions with contextually specific pathways for change and impact?

Analysis of the interviews suggests that all respondents could set out a *ToA for their developed intervention*: they were able explain the nature of their intervention, the logic of its design, how it should be actualized, and the changes it was intended to bring about. An example of one such pathway for change is set out in Table 3. Here Respondent #4 deconstructs the nature of their intervention in detail, including both intended and actual changes in knowledge and practice, as well as providing evidence on the resulting impact on students. The other examples provided by interview respondents are similar in detail and length, making it impossible to reproduce them all in a single journal article.

Table 3: An example of one respondent's conceptual use of research

Domain	Respondent #4
Problem or driver for intervention	Highfield School had been tasked with supporting more children to exceed expectations in writing. For our early year's children, we felt that this wasn't going to be reached through more handwriting practice or more time sat at tables … something else must happen before children would exceed in their writing.
The intervention	We had noticed over [a number of years] that many children were fearful of failure, getting things wrong or not being able to achieve something, and this was inhibiting them in taking risks in their learning. They would keep doing what they could easily do rather than taking a risk with something new or tricky that might possibly go wrong. We felt that this may well be what was preventing our children from exceeding. Our intervention was informed by Carol Dweck [research into growth mindsets]. From this work we hypothesized that if we were able to change children's feelings and attitudes toward failure, struggle, and getting things wrong, then they would be more likely to take risks in their learning.

Table 3 (continued)

Domain	Respondent #4
Activities and interactions	We have introduced the idea of being a "brave learner." This has not just been applied to writing and maths but to all aspects of learning and being. We have created two brave learner characters and identified the characteristics of being a brave learner. Children are awarded a certificate when they have been a brave learner, and their picture is added to our brave learner display board in school.
Learning	The teachers involved better understand the need to show to children that getting it "wrong" is part of the learning process and only by having another go, changing strategies, or practicing will they get better. Failure and getting things wrong are part of the learning process. They now also have an understanding of the need to give children a language to articulate their feelings while learning.
Changes in behaviour	When a child has been awarded a certificate, we now talk about how the child felt about the struggle they had to be a brave learner. We now praise their effort and resilience and their endurance, not whether they were successful in their quest.
Difference	Over the last six months we have seen a huge change in the attitudes of our children. They talk about being a brave learner and when we, the adults, talk about needing to be a brave learner, they know what they have to do. They also talk about how they and others have been or need to be brave learners. We feel our brave learner program has impacted positively on all children's attainment in writing, especially for those for whom writing has been a struggle. The children have begun to understand that struggle is part of learning, not an indication they will never get there.

All respondents noted that *ToAs were helpful* in how they applied research to their setting. Respondent #3, for example, suggested that the ToA approach had helped her realize the importance of being systematic and rigorous in how interventions are developed, baselines are established, and impacts are assessed. Furthermore, if interventions were not delivering the desired impact, refinements could be undertaken by *reexamining the logic set out within the ToA* and exploring whether its constituent parts were being implemented or supported effectively. This was also reflected by Respondent #5, who noted that employing a ToA-type approach made it possible to systematically explore the problem, what they were doing about it, and what had changed. Alternatively, the *ToA approach can be used to help refine interventions* that appear to be unsuccessful: "It also helps you address 'Well, actually, it didn't work, so where do I go now?'… So, it opens up another question on where you're looking at" (Respondent #12).

Other key points emerging from this research question highlight that the interventions developed by respondents were fully grounded in the research they engaged with in workshop one. In other words, *research was being conceptually used.* In particular, three respondents could specifically identify the author or the title of the research underpinning their intervention (see Table 4). Others could not recall the name of the research(er) or the title of the research but they could describe what the research was about and its implications for practice. Furthermore, survey data suggests that by the end of the project, participants felt they had *developed the skills to interpret and then apply academic research* to the design of new teaching and learning strategies. Survey questions 4 and 5 in Table 2, for instance, indicate that over the course of the

project, respondents typically gained more confidence in interpreting research findings. They also reported a stronger ability to employ research effectively when developing new pedagogies. These responses reinforcing the suggestion that the interventions developed had a basis in the research introduced by the first author.

Table 4: One respondent's impact statement

Impact domain	Impact text and data (Respondent #11)
Learning	The aim was to improve teachers' understanding of the effective characteristics of learning, and whether this approach impacts on writing outcomes for summer-born children. Specific learning included "the approach has changed our perspective on the importance of some core skills [and has led to an] improved understanding of why [a] certain provision is important to specific groups and individuals. From our staff questionnaire, it is clear that teachers and teaching assistants all have a greater knowledge of the learning characteristics."
Changes in behaviour	Changes in teacher practice noted by Respondent #11 included "changes to teachers' planning activity—using characteristics of effective learning to move away from curriculum-specific foci"; "learning values are now driving teaching practice [rather than end-of-year goals]"; teachers were "more actively looking for effective learning behaviours and planning activities to develop these behaviours"; there was more of a general focus on "getting children to use the language of learning, so reflecting on their own learning"; and depending on the cohort/class, "we have had to change the focus from role play writing opportunities to individual interests … we have also had to do much more fine/gross motor work." In other words, teachers were also taking a differentiated, learning-centred approach, employing their understanding of the effective characteristics of learning.
Difference	Leuven Scale data shows greater engagement in learning by children; interview data with children suggests greater confidence and understanding. Parent questionnaires indicate that parents can see differences in their children's writing. For example, one parent noted that "the forming of Jill's letters and her interest in writing have both improved significantly." Furthermore, the school's writing data for 2015 highlighted that only 60 percent of summer-born children met their end-of-year early learning goals for writing. This compares to 83 percent of autumn-born children. Respondent #11 argued that the changes in practice noted earlier worked extremely well; ultimately leading to a rise in the number of children meeting their writing early learning goals: 86 percent in 2016 and 82 percent in 2017. In other words, sustained improvements of over 20 percent.

Research question 3: Did participants perceive that as a result of these activities, they were developing interventions that made a difference to teaching and learning? How and why?

For question 3, interviewee responses clearly indicated *changes in learning, behaviours, and outcomes for children*. Table 4 provides one exemplar response in its entirety. For other respondents, sample quotations that capture changes in practice and children's outcomes are provided to show an illustration of what was achieved. For example,

Respondent #2's research question was, "If they're better risk-takers and they're more willing to try things, are their reading levels coming up?" Respondent #2's approach was to create "a small focus group [and to work with the group using] books and empathy of characters [to help them understand that] you can't learn without being uncomfortable, and all those sorts of things. So, break down the barriers and make them risk-takers, and that links with the empathy, because we're all in the pit at different times. Bar one, the whole focus group did get to [working above age-related expectations], so, it seemed to have been successful … but I've been doing it with all of them. I think it's been, outside of that group, it's been effective, as well."

Respondent #5 noted that "there were six boys who I was trying to get to age-related expectations for writing, and at the beginning of the year they predicted that they might not make it. Out of that, four have made it, two haven't, so I guess the data is saying that it's more successful than not [in fact, the data showed that the four students in question had exceeded expectations]. The Talk for Writing [an existing and successful pedagogic approach] works in particular for stamina of writing. When [the students] arrived in September, their stamina and confidence to write at length was zero. The Talk for Writing just gives them the toolkit to do that … it's been a good scaffold for them. It has helped them grow in confidence and ability."

Respondents #6 and #8 were working collaboratively on a feedback project. They noted that "using the Leuven capture sheet, it was clear that our focus children were slow to settle to a given task. Having checklist prompt cards and strategy cards [derived from research by Gibbs & Simpson, 2004] have certainly made things quicker and the children are all now engaged positively with their writing. The quality of writing has improved and outcomes in reading and writing [according to the end-of-year learning goals] are now significantly above average" (Respondent #8). Furthermore, data provided by these two respondents shows that the gap between the highest and lowest achieving students in terms of meeting or exceeding age-related expectations narrowed during the course of the project from 10 percent to six percent.

Finally, Respondent #12's project was designed to explore children's understanding of mastery with the aim of helping them exceed age-related expectations in writing and maths. It drew on research by Patrick Yarker (2016) and Daniel Schumacher, Robert Englander, and Carol Carraccio (2013). Two focus groups of children were selected and learning conversations were held about the notions of mastery. Subsequently, a language of learning was introduced across Year 1 to help children see mistakes as part of the learning process rather than a setback and understand that these mistakes could help them master their learning. Teachers and teaching assistants undertook the modelling of mastery language and skills. End of year data shows that the number of children in Year 1 meeting their age-related expectations for that year had risen from 76 percent to 83 percent in writing and from 83 percent to 92 percent in maths.

Conclusions and discussion

This article suggests that teachers' use of research tends to be conceptual rather than instrumental, while at the same time noting that requirements for research use tend to have a functional and measurable nature in order to deliver continuous quality

improvement. Correspondingly, this conception of RITP is achieved through an approach that can help teachers engage effectively with research evidence in order to adapt existing research/research-informed interventions such that they achieve the desired impact in the setting in question. The first author's approach for this has been to present research in order to make ToAs both visible and explicit, and to help teachers consider how to tailor research in order to ensure interventions operate most effectively in their own settings, while simultaneously helping them identify ways of measuring the impact of such interventions. This approach has enabled Learningfield Federation's teachers to successfully engage with research evidence on effective pedagogic practices. Perhaps more important, however, is that the article presents evidence to suggest that the effective scale-up of research-informed interventions is less to do with the instrumental replication of existing strategies and more to do with understanding why interventions have been successful and how that success might be realized in a new setting and context.

The world of education is full of examples of failed instrumental replication (Dede, 2016). Chris Bradford and Melissa Braaten (2017), for example, undertaking research into the centralized roll-out of an initiative referred to as "great teaching" note that, as a result of enforced instrumental replication, teachers involved in the initiative felt both unable to employ their professional judgement and were prevented from prioritizing what they valued and regarded as great teaching and learning. Ultimately this enforced instrumental use of a research-informed intervention served to demoralize teachers, but it also meant that the reform was only engaged with in a cursory way. Thus, great teaching never became fully integrated into existing pedagogy. At the same time, many academics continue to pursue strict notions of instrumental fidelity (e.g., Fixsen, 2017), insisting that once research has demonstrated that an intervention is successful, the intervention should be engaged with instrumentally and without deviation. The analysis in this article, however, starts to address how to resolve the apparent contradiction between instrumental research-use fidelity and the need for adaption that comes with the conceptual-functional engagement that typifies teachers' use of research (Klieme, 2017).

As a result, it is time to reconsider the importance of instrumental research-use fidelity to the scale-up of research-informed interventions. Or perhaps, to be more precise, to reconsider what fidelity really means and why it is important in relation to teachers' engagement with research. Specifically, if an approach has been developed in a given setting, there is no guarantee that it is either possible or desirable to roll out the exact same approach in the specificities of a different school. Instead what is needed is to find ways of achieving similar success by helping teachers tap into the same social drivers as the original research-informed intervention (assuming they hold in a new setting), but to do so by using approaches that are suitable to the resources available, the children being taught, the skills of the teachers in place, and so on. Fidelity then should be regarded primarily as fidelity to a ToA, but *in situ*—not necessarily to the specific way that theory of action has been operationalized.

In all cases, teachers were engaged with research that had examples of specific interventions that could have been implemented through instrumental means (e.g., Assessment for Learning Feedback or Talk for Writing). In all but one situation, teach-

ers engaged with the research in a conceptual way in order to develop an alternative intervention that worked best for them. In all situations, teachers reported impact in terms of their knowledge, their practice, and outcomes for their children. In other words, the data presented shows that this approach to helping teachers engage with research appears to have been impactful. In some cases, this impact appears to be substantive (see Table 4). Although this impact was due to the use of the approach detailed, the current research design is not possible to definitively attribute impact in this way alone. Nonetheless, in an age when governments are increasingly encouraging teachers to once again be professionals, it is important to work with teachers to build their capacity so they have a choice: rather than simply follow, they can actively create and define where doing so is likely to be more effective. To push forward this message in a way that will deliver change, however, a large-scale evaluation of this model should be undertaken to understand whether it truly makes a difference to both teaching and student's learning outcomes.

Note

1. Symbolic research use, which is generally thought of as the use of research to post-hoc rationalize a given decision, is ignored for the purpose of this article.

Websites

Best Evidence Encyclopedia, http://www.bestevidence.org/

Campbell Collaboration, https://campbellcollaboration.org/

Education Endowment Foundation Teaching and Learning Toolkit, https://educationendowmentfoundation.org.uk/

What Works Clearinghouse, https://ies.ed.gov/ncee/wwc/

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Mediated, Evidence-Informed Practice as Impact

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Abstract

This study presents a conceptualization of mediated, evidence-informed practice as a form of impact within the education context, then examines whether and how a particular intermediary organization, Edutopia, is having such an impact. Extant open- and closed-ended survey data are analyzed. Survey respondents routinely reported using content hosted or featured by Edutopia in their professional practice, and provided specific insights regarding how they were doing so. These findings provide strong evidence that an educational intermediary can variously impact educators' practices. The study provides a conceptualization and model that may be useful for other intermediaries and for scholars who are interested in examining impact and knowledge mobilization in and beyond education.

Keywords Knowledge mobilization; Evidence use; Intermediaries; Brokerage

Mediated, evidence-informed practice as impact

In and beyond the United States, educational intermediary organizations[1] (IOs) are increasingly being recognized for their importance to research use processes (Cooper, 2014; Honig, 2004). Given that educators rarely directly interact with researchers (Farley-Ripple, May, Karpyn, Tilley, & McDonough, 2018) or directly engage with primary research (Cordingley, 2008), IOs are vital. Researchers—and research infor-

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mation—and practitioners are typically linked or mediated through various third-party organizations (Cooper, 2014; Farley-Ripple & Grajeda, 2020; Farley-Ripple et al., 2018; Penuel, Briggs, Davidson, Herlihy, Sherer, Hill, Farrell, & Allen, 2016). Accordingly, IOs are key to serious efforts to improve the connections between research and practice and to facilitate evidence-informed educational practice (Malin & Brown, 2020).

Nevertheless, and though education-focused IOs have increased in numbers and sophistication, scholars to date have focused more on those aimed at influencing national- and/or state-level *policy* (e.g., Malin & Lubienski, 2015; Lubienski, Scott, & DeBray, 2011) than on those aimed at directly engaging with or influencing educational *practice*. The latter entities are thus particularly underexplored, neither well understood nor able to draw upon a well-developed research base to support their work (Malin, Brown, & Trubçeac, 2018). Moreover, and central to this article and this special issue, little empirical work is available regarding such intermediaries' *impacts*—their influences or effects (Gorard, See, & Siddiqui, 2020).

To begin to address these key issues, the present study examines whether and how a high-profile intermediary entity called Edutopia is having a particular impact. Specifically, it analyzes whether, how, and why the content/knowledge Edutopia hosts and/or promotes is being used in educational practice. Accordingly, this study first advances and relies upon an understanding of *impact* as the stimulation of the *professional use* of certain favored evidence-informed practices and ideas.[2] It is maintained that for Edutopia and many other practice-focused IOs, the stimulation of professional use is at or near the top of their impact agendas.

Review of literature

The review that follows addresses two main areas. First, it describes the recent and general push for researchers and research-focused entities and IOs to make and demonstrate research impact, and it broadly discusses different approaches to conceptualizing and measuring impact. Second, it considers what "impact" might mean from the perspective of a practice-focused IO. This section advances a conceptualization of impact as intermediated, evidence-informed practice. It also includes relevant background regarding Edutopia, the IO that serves as a theory-building case.

Making, measuring, and demonstrating intermediary organizations' impact in education

The focus in some jurisdictions appears to have moved from emphasizing research *use* to emphasizing research *impact*. Though the general concept that research should have an impact (e.g., by improving teaching and learning) is difficult to contest, this altered policy and practical focus carries certain challenges. For instance, to the extent that *research use* is not particularly well understood or consistently defined (Malin, Brown, & Saultz, 2019; Farley-Ripple, 2016; Gitomer & Crouse, 2018; Penuel et al., 2016), an emphasis on *impact* seems likely to only heighten confusion: What exactly is research impact—and how can it be observed and measured?

Some existing scholarship is informative. For example, Amanda Cooper's (2014) research—which revealed eight brokering functions being performed by what she

termed "research brokering organizations [RBOs]"[3] (p. 30) in Canada—can provide a foundation from which to consider how IOs might make and measure research impact. Cooper's (2014) study revealed RBOs performing the following eight major brokering function/s: "linkage and partnerships, awareness, accessibility, engagement, capacity building, implementation support, organisational development and policy influence" (p. 46).

As Amanda Cooper, Joelle Rodway, Stephen MacGregor, Samantha Shewchuk, and Michelle Searle (2020) argue, this framework provides "fertile ground" (p. 98) for thinking through brokering strategies and the metrics that can be applied to assess their impacts. Different brokering functions necessitate different knowledge mobilization strategies, which in turn oblige or preference different impact measurement. For instance, the *linkage and partnerships* function would be focused on what they term "collaboration indicators," such as the number of new partnerships formed and social network growth, whereas the *engagement* function would focus on "use indicators" (Cooper et al., 2020, p. 99), such as the number of people intending to use the information and the number of people adapting the information.

Edutopia's primary brokering function according to this schematic concerns the *engagement* function: "increasing engagement with research content through making it appeal to more of our senses" (Cooper, 2014, p. 47, italics removed). For example, Edutopia's new #HowLearningHappens video series—a 20-plus video collection that had been viewed 7.5 million times as of May 23, 2019 (Riddell, 2019)—uses video to explore how schools can "better align their practices with what the science says about human learning" (George Lucas Educational Foundation, 2019a, n.p.). This collection, featuring Linda Darling-Hammond and Pamela Cantor, "pairs research insights with a variety of insights from schools, all grounded in the science of learning and development" (George Lucas Educational Foundation, 2019a, n.p.). These videos span several topics and categories, beginning with introductory materials and then addressing cultivating a belonging mindset, fostering positive relationships, building academic confidence, developing foundational skills, and establishing positive conditions for learning. Given Edutopia's engagement emphasis, "use indicators" are particularly salient. Edutopia performs other brokering functions as well; for instance, its platforms and its knowledge exchange approaches (including the Twitter chats it hosts every month or so) serve a linkage and partnerships function, "facilitating connections among diverse stakeholders and supporting collaboration" (Cooper, 2014, p. 47). Ultimately, though, Edutopia's chief priority concerns stimulating educators' professional use of particular strategies and ideas. In other words, fostering professional use is key to its impact agenda, and thus indicators of use are (and ought to be) central to its impact measurement/evaluation program.

Research impact as mediated, evidence-informed practice

For many IOs (Edutopia included), a central purpose is to influence particular end users, whether they are educators, policymakers, and/or members of the public. In the U.S., efforts to tighten research-practice connections are longstanding, albeit against the challenging backdrop of fluctuating governmental support, with most such efforts featuring the development or leveraging of IOs, such as the Regional

Educational Laboratories and the What Works Clearinghouse (Farley-Ripple, Tilley, & Tise, 2017). Education practice-focused IOs have pursued a variety of approaches. John Bush (2017) surveyed the international landscape and suggested these linking agents typically fulfill one or more of the following three roles: they 1) create resources to distill and communicate research-based evidence; 2) convene partnerships between research and practice; and/or 3) support practitioners as they engage with evidence and test its local impacts.

In Edutopia's case, the first aim is primary. More specifically, Edutopia aims to influence educational practitioners by promoting and stimulating the adoption or adaptation of particular practices; this is achieved through media activities and products, such as YouTube videos, blog posts, and social media posts. Edutopia seeks to shine a "spotlight on what works in education, [showing] people how they can adopt or adapt best practices" (George Lucas Educational Foundation, 2019b, n.p.). Thus, a central intended *impact* concerns stimulating the professional *use* of the ideas and strategies Edutopia promotes.

Edutopia is one part of the George Lucas Educational Foundation, a nonprofit foundation established in 1991 by filmmaker George Lucas (George Lucas Educational Foundation, 2019c). The foundation moved all its content online to the Edutopia website in 2010. Content includes YouTube videos, blog posts, and other resources. Edutopia has a large and multi-platform social media presence; as of July 28, 2019, they had about 1.35 million followers on Facebook, 1.1 million on Twitter, 138 thousand on Instagram, 113 thousand on Pinterest, and 105 thousand subscribers on YouTube.

Edutopia currently focuses on six core strategies: "project-based learning, social and emotional learning, comprehensive assessment, teacher development, integrated studies, and technology integration" (George Lucas Educational Foundation, 2019d). The flow and form of a large portion of the site's content (which typically revolves around the organization's core strategies) is consistent with research evidence; these core strategies, for example, are buttressed by literature reviews posted to the website. Similarly, research evidence is sometimes explicitly presented and central to the messaging (e.g., the new How Learning Happens videos; George Lucas Educational Foundation, 2020a) and the research-based content being produced by Youki Terada, Edutopia's research and standards editor (George Lucas Educational Foundation, 2020b). However, Edutopia is not focused exclusively on promoting research knowledge. For example, it often shares strategies and tips that were developed by educators and that, though apparently consistent with the spirit of Edutopia's core strategies, have not yet been systematically researched. In this regard, Malin et al. (2018) found Edutopia to feature and share all three main knowledge types as articulated by Vicky Ward (2017)—scientific/factual knowledge, technical knowledge, and practical wisdom—though with a preference toward the latter type, which includes judgments, values, and beliefs.

This study incorporates the realistic and cross-disciplinary understanding that at the point of *use*—the emphasis of the present study—research evidence is invariably integrated with other forms of knowledge and knowing (e.g., see Nutley, Davies, & Hughes, 2019). As Julie Nelson and Carol Campbell (2019) explain: "Research is

a core element of EIPP [evidence-informed policy and practice], but it does not provide the sum total of evidence needed for EIPP" (p. 133). This notion is applicable to education, given the "near-universal agreement" (Cain, Brindley, Brown, Jones, & Riga, 2019, p. 3) that research alone is an insufficient practical and professional guide (see the review by Cain et al., 2019). Donald McIntyre (2005), for instance, argues that research generates knowledge that differs from that which educators need. Christopher Winch, Alis Oancea, and Janet Orchard (2015) acknowledge these challenges and nonetheless argue that research can contribute variously to the development of educators' practical knowledge, though not without acts of imagination (i.e., active transformation and the context-sensitive application of research insights). Edutopia might be viewed as facilitating such imaginative acts and, accordingly, fostering evidence-informed practice. Malin and colleagues (2018) conjectured that Edutopia's integration of different knowledge types was key to its popularity among educators and likely strengthened its practical influence.

As such, the present study advances a conceptualization of research impact as *mediated, evidence-informed practice*. In other words, from the perspective of an IO such as Edutopia, stimulating evidence-informed practice via its mediated processes and products constitutes a sought-after form of research impact. This conception is based on the understanding that the facilitation of evidence-informed practice is a worthy and realistic goal, and one that Edutopia pursues through its core products and processes. As noted previously, this study takes up a relatively open understanding of research evidence, admitting knowledge obtained via various methodologies but envisioning that it has been obtained systematically and has passed through quality control mechanisms such as a blind peer review. Given these definitions and implications (Malin et al., 2018), the instances of professional use as presented in this study can be understood as falling within a particular class of impact, and these can also be seen as instances of evidence-informed practice.

Data and methods

This study treats Edutopia as a practice-focused IO "case" and seeks to explore the extent and ways in which its features and content are being used professionally (i.e., whether and how it is achieving a central, desired *impact*). Edutopia was selected due to its prominence in this realm and its willingness to share pertinent data with the researcher. This study drew from two main data sources: results from Edutopia's 2017 Audience Profile Survey (APS; N = 6,860; developed by Harvey Research, Inc.) and from the 2018 Edutopia Impact Survey (EIS; N = 3,675) (see Appendix for additional information). Several survey items from the EIS and the APS enable the examination of professional use as a form of impact (see Appendix, "Key Items").

Qualitative (open-ended) and quantitative (Likert-scale) survey responses were brought together to address this study's main research question. Addressing the extent of use was relatively straightforward and relied primarily on quantitative response data. Analyzing the manner of use was supported by prior scholarship describing distinct "types" of research use (i.e., instrumental, conceptual, tactical). The following definitions, utilized in Penuel et al. (2016) and based upon Carol Weiss and Michael Bucavalas' scholarship (1980), were adopted for this study:

Instrumental use: Research is applied to guide or inform a specific decision.

Conceptual use: Research induces changes in the way a person views either a problem or the possible solution space for a problem.

Symbolic/political use: Research is used to validate a decision or legitimate a decision already made.

This study also assumes other types of evidence (and/or combinations of evidence types) can be used in these same ways. Weiss (1979), for instance, noted how research is but one part of a complicated decision-making process, and Malin and colleagues (Malin, 2016; Malin et al., 2019) described how educators variously utilized multiple evidence types to support their work and decision-making. Thus, as applied to this study, a survey respondent's description of implementing a particular Edutopia-promoted strategy is coded as an instance of instrumental evidence use. This is based on the understanding that a package of evidence, including but not limited to research evidence (Malin et al., 2018; Weiss, 1979), has been used instrumentally—in this case, influencing a respondent's decision to try a new educational approach.

To manage voluminous data, the researcher then also selected and analyzed qualitative, open-ended data from random data samples (N = 500 respondents for each survey). The respondent profile for these samples approximated the full survey respondent profiles, with minor departures. Both samples, for example, slightly overrepresented teachers relative to the full samples (60% versus 52% in the APS and 59% versus 57% in the EIS, respectively). The researcher's goal for this study was relatively modest: to obtain an initial understanding of use extents, types, and conditions. Accordingly, analyses also attended to a respondent's professional role and the level and arena within which use was reportedly occurring (e.g., classroom, grade level, school, district). Throughout, the researcher remained open to emergent codes and patterns.

Limitations

This study includes some limitations. First, it relies on extant data, and primarily on data that were obtained via one form of data collection (survey methods). Survey research includes certain risks relative to interpreting self-report data (Gitomer & Crouse, 2019). Likewise, researchers' ability to make population-level inferences is hampered when survey respondents are not representative of the intended population. These challenges are especially likely when response rates are low, as appears to be true with data being analyzed as part of this study. For instance, based on the estimate that approximately 1.2 million potential participants received or were exposed to the APS, less than 0.6 percent of them completed the survey. Accordingly, efforts have been made to avoid making such inferences while interpreting these data. In spite of these challenges, surveys are commonly used in social science research and in studies of research use, as they possess certain key advantages. Chiefly, they can obtain specific responses from a large number of respondents with efficiency; they can reveal the distribution of responses for particular questions or scales;

and they can "investigate beliefs, practices and experiences associated with [the use of research evidence]" (Gitomer & Crouse, 2018, p. 30). This study is also limited in that it does not clearly enable the isolation of systematic research use or research impact. In brief, the methods and data sources used as part of this study do not enable the researcher to precisely identify the degree to which "professional use" as described by Edutopia community members is research-based or that respondents' decisions were based upon research evidence versus other forms of evidence. However, and as previously argued, this study is based on the understandings that: 1) Edutopia embeds and includes research evidence in a variety of ways; and 2) at "the point of use" (Nutley et al., 2019, p. 242), practitioners and policymakers invariably integrate research evidence with other forms of knowledge and knowing.

Results

This study's results are presented within two subsections. The first subsection describes evidence related to the *extent* of professional use (i.e., the extent to which Edutopia community members are utilizing Edutopia's ideas and strategies). The second subsection addresses the *manner* of professional use.

Extent of professional use

Data sources providing information regarding the extent to which Edutopia's ideas and strategies are being professionally utilized included portions of the 2018 Edutopia Impact Survey (EIS); portions of the 2017 Audience Profile Survey (APS); and an #EdutopiaChat follow-up poll and survey.

The 2018 EIS included an item asking respondents whether they had "tried a specific tip or strategy as a result of hearing about it from Edutopia." This item was thus focused particularly on assessing the *instrumental* use of evidence (also addressed in the next section). Among respondents (N = 3,675), 79 percent answered affirmatively. Table 1 provides response patterns by professional category.

Table 1. Percent responding affirmatively to item "Have you tried a specific tip or strategy as a result of hearing about it from Edutopia?"

Professional role	Number of respondents	Percent responded affirmatively
K–12 teacher	2,106	82.4%
School staff	169	69.6%
Principal	445	83.5%
District staff	137	75.6%
Superintendent	23	91.3%
Professional developer	446	77.4%
Other	635	69.0%

The 2017 APS also contained several items concerning the extent and nature of professional use, and this survey's design permitted the analysis of a broader spectrum of "use" types (see the following subsection for a fuller analysis). Responding to a series of professional use-related statements, participants indicated considerable

and varied use of the material. For example, 89 percent of respondents either agreed or strongly agreed that Edutopia has "given me tips or strategies that I have implemented." Segmenting by respondent type, 96 percent of administrators and 91 percent of kindergarten to Grade 12 (K–12) teachers (including aides) agreed or strongly agreed with this statement. Seventy-seven percent noted Edutopia is "an important part of my professional learning."

Edutopia also uses Twitter to poll and survey participants directly following its #EdutopiaChat sessions. For the September 2018 chat, a Twitter poll ($N = 63$) asked participants, "Will today's chat make a difference in how you do things in your classroom or school?" In response, 33 percent selected, "Yes, a big impact," and 27 percent selected, "Yes, it helped somewhat." September survey respondents ($N = 13$) indicated the chat was "useful" ($M = 4.6$, on a 1–5 scale); 12 of 13 indicated it would "affect how [they] do things in the classroom."

Altogether, the data converge to illustrate that Edutopia is being professionally utilized to a large extent, at least among survey/poll respondents, providing fairly strong evidence that Edutopia is indeed achieving one of its most highly prioritized goals. Stronger evidence might include, for instance, observations of use to complement the survey data and more attention to depth of use (for more on this, see Discussion).

Manner of professional use

This analysis of the manner of research use is supported in part by prior research regarding different evidence use types. This analysis also attends to the level at which use occurs.

Instrumental use—when research or other evidence (Weiss, 1980) is applied directly to decision-making—was most common and abundant within the data reviewed, a result that might relate in part to the data-collection techniques. Both surveys contained qualitative and quantitative items and response data that were appraised as addressing instrumental evidence use. On one item on the APS survey, "Edutopia has given me tips and strategies that I have implemented," responses were as follows: strongly agree (39%), agree (50%), neutral (9%), disagree (1%), strongly disagree (0%). Another APS item, in checklist format, asked respondents how they have "used Edutopia resources in [their] classroom," and 96 percent checked at least one item (certain options for this item do not, however, fit the "instrumental use" category). Certain options within this item provide additional detail regarding the types of instrumental uses that are occurring; for example, 37 percent of respondents indicated "using technology in new and more transformative ways," 37 percent indicated they "shifted toward more student-based learning," and 32 percent "offered more project-based learning experiences."

Similarly, 79 percent of EIS respondents affirmed that they had "tried a specific tip or strategy as a result of hearing about it from Edutopia." The EIS follow-up item—"What specific tip or strategy did you try and how did it go?"—provided complementary qualitative detail. For instance, when a teacher responded about trying to implement "peace corners" in the classroom following exposure to this concept via Edutopia, it was assumed they: a) judged the evidence presented as compelling,

and b) decided to directly apply this evidence in their professional lives (in this case, deciding to adopt peace corners). Descriptions such as these were thus coded as instances of instrumental evidence use.

Most instrumental uses occurred at the classroom level (this is consistent with Edutopia's focus and also provides useful insights into the various ways in which many teachers shape and adjust their learning environments). Teacher respondents described trying and using a variety of tips and strategies shared by Edutopia, and these uses were found by Edutopia staff to map closely onto their core strategies. Table 2 provides classroom-level examples for each of the six core areas.

Table 2. Example of classroom-level use by Edutopia core area

Core area	Classroom-level example
Project-based learning	Teacher describes using project-based learning planning tips
Social and emotional learning	Teacher describes implementing morning meetings to build community
Comprehensive assessment	Teacher describes using formative assessment and exit slips
Teacher development	Teacher describes filming self (while teaching) for developmental purposes
Integrated studies	Teacher describes using cross-curricular approaches
Technology integration	Teacher describes efforts and technologies related to "flipping the classroom"*

Note: *a strategy and form of blended learning in which new concepts/content are introduced outside class and then actively explored/applied in class

Although most instances occurred at the classroom level, some also were evident at team, grade, school, or district levels. For instance, a principal reported that staff tried some technology that Edutopia had reviewed. (The study assumed that these reviews affected the decision to use the technology.) A superintendent described using information related to the design of learning environments (floor-planning arrangements). School administrators also often described particular approaches being undertaken on a school-wide scale, but it was not always clear whether these decisions were informed by Edutopia material or if the materials were being used to reinforce or facilitate ongoing professional learning that had already been implemented (see *Symbolic/Political use*, p. 10).

Conceptual use refers to instances when evidence influences or enlightens how professionals think about problems or solutions (Penuel et al., 2016). The APS survey in particular contained a small set of items and response data that were interpreted as suggesting or illuminating conceptual evidence use. For example, 77 percent of respondents agreed with the item, "Edutopia is an important part of my professional learning" (the detailed breakdown is: disagree strongly (1%), disagree (3%), neutral (19%), agree (48%), and agree strongly (29%)), suggesting conceptual use. Similarly, a few response options to the item, "How have you used Edutopia resources in the classroom?" suggest conceptual uses. The following response options suggest interactive/dialogic uses of Edutopia resources, perhaps serving to conceptually alter the problem or solution space around important topics: shared links or copies (58%),

discussed topic(s) with colleagues (56%), presented information in a teacher-training course or workshop (25%), and presented information at faculty meetings and/or conferences (24%). An assumption here is that these instances regularly include conceptual evidence use (this should be further explored in a future study).

Qualitative data complemented these data. On the APS, an open-ended item asked, "Who would you recommend Edutopia to and why?" Some responses provided insights into the ways in which Edutopia content and/or participation in the Edutopia community is conceptually supportive. For instance, respondents described how Edutopia provides "thought-provoking" material that served to "stretch [their] thinking" and "provide a different view." As noted by a teacher and technology specialist, "There are a lot of different perspectives to help keep me informed of what could possibly support my kind of environment." Some specific payoffs of these shifts to professional thinking were also reported. One teacher, for instance, described becoming more empathetic with students, and another described becoming a better, clearer communicator. (Instances when educators described feeling validated or reaffirmed by the content were more common, but arguably affirmation serves a key function for educators as well.) Also, although conceptual use was most frequently described at an individual level, there were also many suggestions that evidence was being conceptually employed at larger levels. For example, a district administrator described sharing these materials with principals and other colleagues because it "spurs conversations, helps us to think strategically and build vision."

An unanticipated result relates to the extent to which educators reported being "inspired" by content. For example, 65 percent of APS survey respondents agreed that Edutopia resources helped them to get inspired or recharged. Qualitative data support that getting inspired or energized is key for some educator respondents. For a curriculum director respondent, the material helps to "serve as a catalyst for action in schools," while for a high school teacher it can "help educators recharge and approach curriculum from a fresh perspective." A school-level administrator noted, "We all … need to be reminded of how we want to be in the classroom." Although more study is needed to better understand this "inspiration" or "energizing" function, it is conjectured that being inspired serves initially to expand one's sense of professional possibilities—if so, inspiration may fit most closely within the conceptual evidence use category.

Symbolic/political use refers to situations when evidence is used to justify or support decisions that have already been made. Two response options to the APS item, "How have you used Edutopia resources in the classroom?" suggest symbolic/political uses of Edutopia material. Thirty percent of respondents affirmed that they "gathered evidence/validation for classroom practices [they] wanted," and 16 percent indicated that they "shared [Edutopia material] with parents and/or community members to gain buy-in." While these are interpreted as symbolic/political uses, it should be noted that these options were affirmed at relatively low levels. Qualitative data from the EIS provided some further insights. For instance, a principal described using Edutopia material to develop project-based learning practices in their school, and a staff development coordinator/coach described the utility of technology integration materials. It was assumed that decisions had already been made to implement pro-

ject-based learning practices and pursue technology integration, and the Edutopia materials were used to facilitate/strengthen implementation. These data also suggested that symbolic/political use was more likely to occur when respondents were administrators or in non-classroom positions (e.g., instructional coaches).

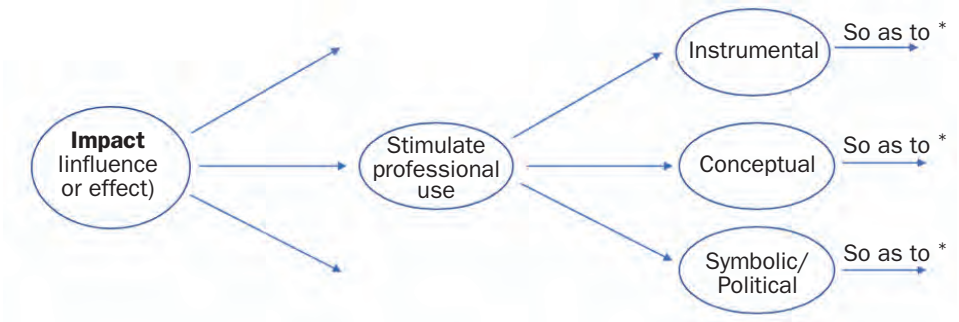
Two other use types include *imposed* (when there are mandates to use research) and *process use* (referring to what is learned when practitioners conduct research) (Tseng, 2012). These types were more difficult to discern within the data set, but that does not mean that Edutopia content is not used in these ways. This difficulty could be a reflection of data structure.

Discussion

This study presented a conceptualization of mediated, evidence-informed professional use as impact, and then examined the ways in which one IO (Edutopia) is demonstrating such an impact and to what extent. Evidence presented herein supports that Edutopia content is being professionally used (i.e., making an impact) and provides initial insights into how it is being used. This discussion reflects on these results in light of extant literature, and given the current push to measure and document research impact.

Figure 1 depicts this study's basic argument and findings. Impact is understood broadly as an influence or effect. Edutopia and other practice-focused IOs may have numerous intended impacts, but invariably a chief aim relates to the stimulation of professional use (in doing so, it is argued that they are stimulating *evidence-informed practice*). Using an existing evidence use typology, the specific nature of use can be further categorized and evaluated. This study's results have provided strong evidence that Edutopia is having this broad and central impact and, further, that it is influencing educators' professional thoughts (*conceptual* use) and decisions (*instrumental* and/or *tactical* use).

Figure 1. Depiction of mediated impact (stimulation of professional use)



Note: *In this case, the assumed ultimate intended impact is to improve youth/student outcomes (and, potentially, to make broader social impacts)

As is now well recognized (see Gitomer & Crouse, 2019), it is challenging to measure research (and other evidence) use in education. In that regard, though this study is also imperfect—see, for example, the Limitations section regarding this study's primary reliance on extant survey data—it is also plain from the results that Edutopia-hosted content is being professionally used by a large number of educators. It is influencing many educators' thoughts, decisions, and professional behaviors. Moreover, and though patterns of use demand further study, the analysis presented

herein revealed varied uses. Accordingly, this study supports the notion that an educational IO can substantially influence educators' professional thinking and practice, and it provides some detail regarding specific uses that could occur or could be instigated.

These results underscore that, indeed, it is possible for research evidence—alongside and integrated with other forms of evidence—to "directly 'reach' the practice of education" (Cain et al., 2019, p. 2). In other words, research can have an influence on core practice that is "unmediated by policy" (p. 2). In turn, these results serve to reveal that educators still possess considerable decisional space regarding core aspects of teaching and learning. Indeed, the results show that IOs might provide a throughline to what Stephen Ball (2017, p. 10) refers to as "little-p" policies: policies that are not formally codified but that can nonetheless become regularized practices. Likewise, it might be suggested that Edutopia is, through its products and processes, facilitating a hybridizing, teacher-centered model of "inside out" (Tyack & Cuban, 1995, p. 138) educational reform. Looking to the future after historically analyzing U.S. reforms, David Tyack and Larry Cuban (1995, p. 136) suggested the "central purpose of reform" ought to be to "improve *learning*," which ultimately meant making "[positive] encounters between students and teachers more common." To do so requires multiple foci, but *must* include practitioners in defining problems, developing and sharing solutions, and then hybridizing them to fit their varied circumstances (Tyack & Cuban, 1995). Thinking in this manner, Edutopia's products and processes could be viewed as fostering the spread and hybridization of some such knowledge among teachers and other educators.

Still, it is important to note that this study provides limited insights into the *depth* of educators' research and other evidence use (see Coburn, 2003; Farley-Ripple et al., 2018). To more fully understand "the activities, roles, routines, and tools by which research meaningfully and systematically informs educational decisions" (Farley-Ripple et al., 2018, p. 238) requires additional and more up-close data collection approaches (e.g., in-depth interviewing, observations of key deliberative forums).

It is worthwhile also to consider *why* Edutopia is being valued and utilized. This is a salient question given that it appears to be accomplishing something that is at or near the top of many IOs' "impact hierarchies"—i.e., they appear to be attaining or approaching their desired impact. Preliminary research about this topic (Malin et al. [2018] suggest Edutopia is being valued for a combination of features. They are being appreciated, for instance, for providing a wide array of authentic and relevant content (the message), and likely also for their messengers (in many cases, educators, who are perceived to possess useful and credible knowledge). Their messages are typically delivered in narrative form and with compelling, emotive appeals; these and other features align with recommendations for increasing research utilization (Oliver & Cairney, 2019). Also, and perhaps to the dismay of some purists, it is likely that Edutopia content is appreciated in part *because* it does not solely communicate "research," but rather because its messages more closely reflect real-life evidence use insofar as it showcases multiple ways of knowing (Nutley et al., 2019).

In conclusion, this study has advanced and demonstrated a means of conceptualizing, measuring, and appraising a particular form of research impact—research impact as mediated, evidence-informed professional use. Professional use, in turn, was further partitioned into various types, based upon extant scholarship. In so doing, the researcher was demonstrating a form of impact that is at the core of Edutopia's aim (and, presumably, that of many other IOs). In a sense, perhaps the conversational and substantive shift toward emphasizing research impact is positive, offering an opportunity to reimagine what constitutes impact in light of organizational and other particularities. Impact may have multiple meanings and may be indicated in various ways, depending upon specific aims. In any case, however, "use as impact," as demonstrated here, may be at (or very near) the top of the hierarchy of hoped-for impacts for many IOs[4]; accordingly, the conceptualization and methodology described here may be broadly useful (though again, ideally in combination with other, more intimate data collection approaches). Likewise, perhaps the results in terms of reported professional use can provide something of a benchmark against which certain similarly focused IOs can compare. In this vein, the results as reported herein may skew toward the high end of what IOs can expect: Edutopia appears to be relatively well resourced, to have developed a trusted and recognizable brand, and overall to be executing an impressive methodology and set of processes for mobilizing educational knowledge (see also Malin et al., 2018). Finally, it is hoped that scholars interested in these areas will seek to further develop and/or challenge the central concepts and ideas developed and shared through this study. For example, this study's focus on facilitating evidence-informed practice (versus, for example, professionals' use of "pure research") understandably may not appeal to all. In this regard, some may wish to build upon this research by more precisely examining the relative contributions of different forms of evidence to educators' thinking and decision-making.

Notes

1. Intermediary organizations are understood for this study as those aiming not to provide direct services but rather to support those provided by other organizations (in this case, PK to grade 12 schools/districts) (Honig, 2004).
2. For this study, practices and professional thinking based on a combination of experience and pertinent research and/or evaluation evidence are understood to be evidence-informed (England Department for Education, 2014).
3. Cooper (2014) introduced and applied this term to "third party intermediaries whose active role connecting research producers and users is a catalyst for knowledge mobilisation" (p. 30).
4. Arguably, Edutopia's ultimate goal is yet larger; it aims to impact *youth outcomes* (e.g., improving their learning and social-emotional functioning). Appraising Edutopia's success relative to this aspiration would necessitate another approach to impact measurement.

Website

George Lucas Educational Foundation, https://www.edutopia.org/

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Appendix

Additional details about the 2017 Audience Profile Survey (APS) and the 2018 Edutopia Impact Survey (EIS)

Audience Profile Survey

Author: Designed, hosted, and administered by Harvey Research, Inc.

Primary objectives: "To learn more about the informational habits and professional interests and activities of the Edutopia audience, as well as their opinions of the website and social media channels" (Harvey Research, Inc., unpublished summary report).

Administration dates and methods: Invitations via website, e-newsletter, and social media channels (online/electronic survey), with $250 Visa gift card drawing incentive. Responses were collected from January 5 through January 26, 2017.

Population: "1,223,134 potential respondents received or were exposed to the invitation" (Harvey Research, Inc., unpublished summary report).

Responses: 6,860 completed responses.

Respondent profile:

- 52% are teachers in K–12; 11% are administrators, 9% are staff development director/coordinator/coach
- 76% are engaged in public school environments, 20% private, 15% college/university
- 62% are engaged with a Title 1 eligible school
- 44% engaged with a school, including 50% or more students eligible for free/reduced price lunch
- 87% visit Edutopia.org and/or social media sites at least monthly; 61% at least weekly, 16% daily

Key items (relative to this study):

Reflecting on your experiences and communications with Edutopia during the past year, to what extent do you agree with each statement? [Likert: disagree strongly, disagree, neutral, agree, agree strongly]

- Edutopia has increased my knowledge of effective models in education (89% agree or strongly agree)
- Edutopia has given me tips and strategies that I have implemented (89% agree or strongly agree)
- Edutopia is an important part of my professional learning (87% agree or strongly agree)

How have you used Edutopia resources in your classroom? (Please check all that apply)

- One or more (96%)
- Got inspired/recharged (65%)
- Shared links or copies (58%)
- Discussed topic(s) with colleagues (56%)
- Discovered new ideas to implement with students (55%)
- Used technology in new and more transformative ways (37%)

- Shifted toward more student-centered learning (37%)
- Offered more project-based learning experiences (32%)
- Gathered evidence/validation for classroom practices I wanted (30%)
- Incorporated more social-emotional learning (26%)
- Presented information in a teacher training course or workshop (25%)
- Changed my teaching style (24%)
- Presented information at faculty meetings and/or conferences (24%)
- Used more varied and authentic assessments (20%)
- Incorporated more formative assessment (20%)
- Shared with parents and/or community members to gain buy-in (16%)
- Revised school or district curricula (8%)
- Developed school- or district-wide programs (8%)
- Other (3%)
- I have not used information from Edutopia (4%)

Edutopia Impact Survey

Author: Developed, hosted, and administered by Edutopia staff; hosted on Typeform.com.

Primary objectives: This brief, five-item survey was primarily intended to appraise if and how survey participants tried specific tips or strategies from Edutopia.

Administration dates and methods: Invitations were distributed via e-newsletter and social media channels (online/electronic survey), no incentive was offered. Responses were collected from October 13–21, 2018 (from Facebook and Twitter audience) and from October 28 through November 7, 2018 (from email subscribers).

Population: 430,763 potential respondents received or were exposed to the invitation, including 349,516 Facebook followers, approximately 56,822 Twitter followers, and 24,425 email subscribers.

Responses: 3,675, including 548 via social media and 3,127 via email subscribers

Respondent profile:

- 57.3% are teachers in K–12, including: 24.2% elementary; 18.3% middle school; 23.3% high school
- 2% student teacher
- 12.1% are principals or school administrators,
- 4.3% are district staff, 0.6% superintendents
- 11.9% professional developers
- 17.7% "other"
- 87% visit Edutopia.org and/or social media sites at least monthly, 61% at least weekly, 16% daily

Key items (relative to this study):

Have you tried a specific tip or strategy as a result of hearing about it from Edutopia? [Yes/No: 79% said "Yes"]

What specific tip or strategy did you try and how did it go? [Open-ended response]

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A Developmental Evaluation of Research-Practice-Partnerships and Their Impacts

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Abstract

Research-practice-partnerships (RPPs) have arisen as a potentially powerful mechanism for school improvement; however, there is little work how to evaluate RPPs. This study investigates how four RPPs are addressing impact by a) document analysis of metrics (N = 123) being used to assess partnerships, and b) interviews exploring how network leads (N = 11) and policymakers (N = 3) conceptualize partnerships and their impact on the frontlines. Findings suggest that while metrics being used provide a necessary baseline for the number and types of partnerships, more robust methods are needed to capture the quality of interactions and to strategically inform network development. The discussion advocates for network improvement through sharing cases of failures (alongside exemplary cases) to maximize learning, and for the use of developmental evaluation to explore the impacts of RPPs.

Keywords K-12 education;Research impact; Research-practice-partnerships; Knowledge mobilization; Networks

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Introduction

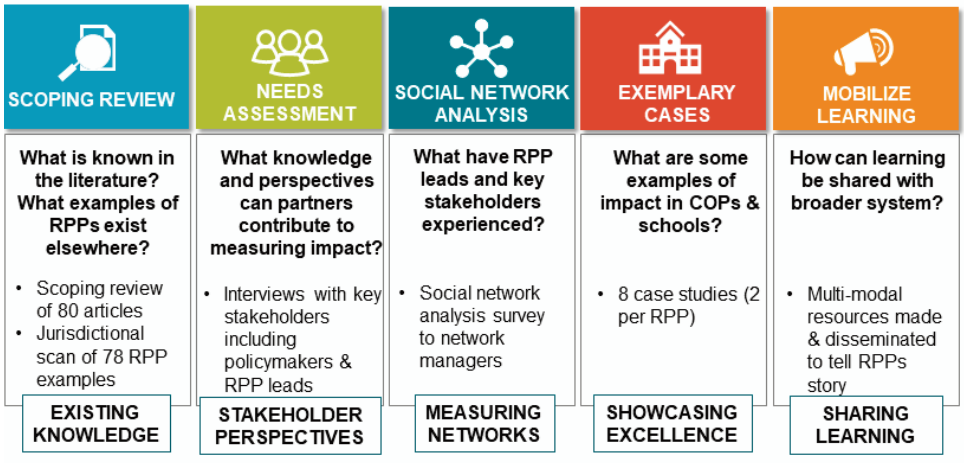
Globally, kindergarten to Grade 12 (K–12) education systems are grappling with how best to integrate research and evidence into policy and practice (efforts referred to here as knowledge mobilization [KMb]) on the frontlines of classrooms so that teachers, students, and communities can benefit (Cooper, Levin, & Campbell, 2009; Nutley, Walter, & Davies, 2007). Knowledge mobilization is the "reciprocal and complementary flow and uptake of research knowledge between researchers, knowledge brokers and knowledge users—both within and beyond academia—in such a way that may benefit users and create positive impacts" (Social Sciences and Humanities Research Council of Canada, 2018, para. 16). Emerging literature suggests research-practice-partnerships (RPPs) as potentially powerful mechanisms to improve the integration of research evidence in K–12 education systems (Coburn, Penuel, & Geil, 2013). This article uses Cynthia Coburn, William Penuel, and Kimberly Geil's (2013) definition of research-practice partnerships (RPPs) as "long-term, mutualistic collaborations between practitioners and researchers that are intentionally organized to investigate problems of practice and solutions for improving district outcomes" (p. 2). Alongside the growth of RPPs across North America for school improvement has been an interest in how to trace their influence across diverse stakeholders often involving multiple researcher and practitioner organizations (Henrick, Cobb, Penuel, Jackson, & Clark, 2017). However, few studies have sought to evaluate their impact.

In response, the purpose of this article is to 1) provide an overview of approaches to measuring RPPs that are emerging from the literature, 2) to introduce developmental evaluation as an approach to measuring RPPs that engages stakeholders, 3) introduce a learning framework developed to assess four RPPs in North America in an evaluation commissioned by the governmental funder, and 4) present data from four RPPs on: a) types of metrics being utilized, and b) interview data exploring the ways that network leads and policymakers describe network goals, partnerships, and impacts arising from their work. In this study, RPPs each included a network of universities, school districts, policymakers, and community organizations coordinating school improvement efforts around priority areas (such as math, equity, and other focus areas). Since there has been little empirical work evaluating RPPs, this study addresses an important gap and provides baseline data on what type of metrics are already being used by RPPs as well as an approach, a developmental evaluation, to go about this work.

This study is part of a broader multi-phase developmental evaluation (see Figure 1).

Developmental evaluation is a collaborative approach to assessing impact that engages

Figure 1. Multi-phase developmental evaluation of four large-scale RPPs



end-users as active participants throughout the process with "a chief aim … to support the development of large-scale social innovations through learning-centered, improvement-focused evaluation," Peurach, Glazer, & Lenhoff, 2016, p. 615). Phase one produced a scoping review of 80 articles, and included an environmental scan of 78 RPPs around the world to inform the development of the learning framework for the subsequent phases (introduced at the end of the literature review). The second phase employed a needs assessment with a three-fold purpose: 1) to engage with key stakeholders that want to collaborate to determine what they perceive as priority areas for continued improvement, 2) identify recommendations to improve networks and cross-network learning opportunities, and 3) co-produce/refine an evaluation framework to measure the impact of RPPs across diverse contexts. The third phase planned to use social network analysis to measure network activities and then to feed results back to network leads in order to make decisions about how to further strengthen the network. The fourth phase would have conducted and showcased exemplary cases from RPPs and communities of practice (CoPs). The final phase planned to mobilize learning through products, events, and networks (this also occurred throughout the other phases). Due to a change in government, only Phases one and two were completed, as the evaluation was cancelled.

This article draws on the first two phases using document analysis and interviews to explore two research questions:

1. What metrics are RPPs using to evaluate their impact? And how do these metrics align with current frameworks to assess RPPs and their effectiveness?
2. What do leaders of RPPs see as important dimensions to cultivating impact in school districts?

The findings suggest that while metrics being used provide basic information on the number and types of products produced and the stakeholders involved in partnerships and events, they fail to capture the richness, depth, and diversity of the work of RPPs. Consequently, more robust methods are needed to capture the quality and depth of interactions between partners, and new approaches are needed to maximize the use of data collected in continuous learning cycles. RPP leaders and policymakers conceptualize success in relation to: collaborative processes (shared goals, new and diverse partnerships, improved student achievement, system alignment); systems and structures (joint work, funding and sustainability, demand from practitioners, equity); continuous learning (capacity building, reach, adaptability, storytelling). This article argues that developmental evaluation, especially if paired with robust social network analysis and theory, encourages the adaptive decision-making and continuous learning cycles necessary to optimize the impact of RPPs for the benefit of teachers, students, and communities.

Literature review: What do we know about evaluating RPPs?

First, the literature review presents what is known about measuring RPPs, it then introduces developmental evaluation as a promising approach to explore RPPs. A learning framework developed through the project to assess RPPs in relation to partnership indicators, dimensions of effectiveness, brokering functions, systems

and structures, collaborative processes, and continuous learning is also presented. The framework was designed by an interdisciplinary research team with input from stakeholders from the RPPs (including policymakers, practitioners, and researchers) to explore four large-scale RPPs in North America.

Defining research-practice partnerships

An anchoring definition emerging for RPPs is the conceptualization offered by Coburnet al. (2013) as "long-term, mutualistic collaborations between practitioners and researchers that are intentionally organized to investigate problems of practice and solutions for improving district outcomes" (p. 2). Coburn et al. (2013) identify five defining characteristics of RPPs. They are long-term, focused on problems of practice, mutualistic (address needs of all partners), intentionally organized, and they produce original analyses. Emerging theoretical work on RPPs has explored the types, dynamics, and outcomes of RPPs (Coburn & Penuel, 2016; Coburn et al., 2013; Penuel, 2017; Tseng, Easton, & Supplee, 2017); explained the mechanisms in RPPs that lead to evidence-based decision-making by practitioners (Wentworth, Mazzeo, & Connolly, 2017); outlined exemplary activities and practices (Pollard, 2008; Ruby, 2015); detailed the necessity, development, and sustainment of RPPs (Kim, Park, Cho, & Kim, 2013; Muñoz, 2016; Quartz, Weinstein, Kaufman, Levine, Mehan, Pollock, Priselac, & Worrell, 2017; Sanders & Epstein, 2000; Turley & Stevens, 2015); developed frameworks for guiding inquiry in RPPs (Kaser & Halbert, 2014); explored how to understand different ways of collaborating in RPPs (Parr & Timperley, 2015); and analyzing how differences can be understood, negotiated, and overcome in RPPs (Penuel, Allen, Coburn, & Farrell, 2015; Penuel, Coburn, & Gallagher, 2013).

A lack of empirical work studying the impact of RPPs

Despite the emerging literature on RPPs, there is a dearth in literature on how to evaluate the collaborative work of RPPs for a variety of factors including the diversity of stakeholders and organizations involved, the variety of activities and priority areas focused on, and methodological challenges in regards to measuring networks (Cooper, Rodway, MacGregor, Shewchuk, & Searle, 2019). As Erin Henrick, Paul Cobb, William R. Penuel, Kara Jackson, and Tiffany Clark (2017) highlight: "funders and RPP members agree that traditional ways of assessing the quality of a research study—such as the number of publications in peer reviewed research journals—do not adequately address critical aspects of RPP work, such as the development of a genuine partnership between researchers and practitioners or the impact of the RPP on the participating practice and research organizations." (p. 1). Caitlin C. Farrell, Kristen L. Davidson, Melia Repko-Erwin, William R. Penuel, Corinne Herlihy, Ashley Seidel Potvin, and Heather C. Hill (2017) conducted a descriptive study of 27 RPPs in the United States using a mixed-method, cross-case design utilizing interviews, surveys (with previously validated items), and grant document analysis to assess the impact of the RPPs. Two surveys were used for researchers and practitioners, with results being compared across the two groups. Major categories explored included goals of the partnership, conducting and using research, activities, communication,

challenges, perceptions of the partnerships, planned future activities, and funding recommendations. Farrell et al. (2017) found that researchers and practitioners were both positive about their involvement in RPPs, reported significant progress toward their collaborative goals, and suggested these collaborations had increased access to resources and expertise to solve educational challenges. However, she also found that

> these types of partnerships struggle to achieve synchrony, that is, a state in which researchers and practitioners operate at the same time scale so as to coordinate activities effectively. It may be hard for researchers to keep up with the 'speed of practice', and researchers' careful analysis proceeds more slowly than is useful for practitioner. (p.61).

These challenges were echoed throughout the literature included in the scoping review.

Key dimensions to consider for RPPs

Emerging from the 80 articles analyzed for the scoping review (Cooper, Shewchuk, MacGregor, Mainhood, Beach, Shulha, & Klinger, 2018) are three overarching categories for understanding the organization and work of RPPs: systems and structures, collaborative processes, and continuous learning. At the core lies shared goals, co-production, and multi-stakeholder collaboration organized around three dimensions:

1. **Systems and structures:** funding, governance, strategic roles, policy environment, system alignment;
2. **Collaborative processes:** improvement planning and data use, communication, trusting relationships, brokering activities, capacity building;
3. **Continuous learning:** social innovation, implementation, evaluation, and adaptation.

Social network analysis is emerging as a potentially powerful methodology to understand evidence use in education across these dimensions. Much of the empirical work is being spearheaded by a small contingent of scholars in the U.S., the U.K., and Canada (Alan Daly, Kara Finnigan, James Spillane, Cynthia Coburn, Bill Penuel, Elizabeth Farley-Ripple, Chris Brown, and Joelle Rodway, See Cooper, Shewchuk, MacGregor, Mainhood, Beach, Shulha, & Klinger, 2018 for all the studies from these listed authors pertaining to RPPs)

In the end, five lessons emerged for RPPs to be successful: the need to build two-way reciprocal streets of engagement, the need to shift data use from accountability and compliance to network learning, the need to identify specific entry points of change, the need for a focus on capacity-building and leveraging brokers across networks, and the need to use communication as a problem-solving tool to assess and adjust innovations and implementation rather than passive reports of activities.

Evaluation frameworks and metrics to assess RPPs

Three frameworks to assess the collaborative work of RPPs, arising from Cooper et al.'s (2018) scoping review, were used to construct the evaluation framework for this study (Cooper, 2013, Henrick et al, 2017; Kothari et al, 2011). It should be noted

that although it is empirically derived, validity evidence is still accruing for these three frameworks.

First, Amanda Cooper's (2013) brokering framework proposes eight brokering functions of KMb: 1) linkage and partnerships, 2) awareness, 3) accessibility, 4) policy influence, 5) engagement, 6) organizational development, 7) implementation support, and 8) capacity building. The framework was developed through a cross-case analysis of 44 Canadian research brokering organizations facilitating interaction between practitioners, researchers, and policymakers and, as such, is relevant to exploring the configurations of RPPs due to similar stakeholder composition.

Second, a new empirically derived framework by Henrick et al. (2017) outlines five dimensions of effectiveness for RPPs: 1) building and cultivating partnership relationships, 2) conducting rigorous research to inform action, 3) supporting the partner practice organization in achieving its goals, 4) producing knowledge that can inform educational improvement efforts more broadly, and 5) building the capacity of participating researchers, practitioners, practice organizations, and research organizations to engage in partnership work. Henrick et al.'s (2017) framework was built from a review of the existing literature in conjunction with semi-structured interviews with two to three researchers from different RPPs (research alliances, design-research partnerships, and networked improvement communities). That study (Henrick et al., 2017) asked about RPP goals, and about indicators of these goals, in addition to collecting metrics and documentation and tools that RPPs were using to assess their impact. Each of the five dimensions in the framework also include further indicators. This framework is relevant to the study, as it is the only framework specifically designed to evaluate RPPs.

Third, Anita Kothari, Lynne MacLean, Nancy Edwards, and Allison Hobbs (2011) provide a set of practice-based indicators to measure collaborative knowledge creation and gauge the impact of partnerships between researchers and policymakers. The indicators arose from interviews with 16 health policymakers and researchers involved in eight research-transfer partnerships in Ontario. Although they arose from work specifically with policymakers, they are relevant to other types of partnerships. First Kothari et al. (2011) identified a set of common partnership indicators: communication, collaborative research, and the dissemination of research. Each dimension includes success indicators (e.g., communication is clear, communication is relevant, communication is timely, communication is respectful). Recognizing that partnerships evolve as they mature, Kothari et al. (2011) then identified two further sets of indicators in relation to early partnership indicators (research findings, negotiations, and partnership enhancement) and mature partnership indicators (meeting information needs, a level of rapport, and commitment). Each dimension includes further success indicators and potential sub-indicators as well. This framework makes an important contribution to thinking through how partnerships with policymakers might differ from partnerships with practitioners (such as in the Henrick et al. [2017] model).

None of these frameworks, however, discuss explicitly the methods that might be best to use in order to study these indicators on the frontlines. As such, an overview of developmental evaluation as a promising approach to studying RPPs is provided.

Developmental evaluation: A promising approach to measuring RPPs

In contrast to more traditional frameworks of evaluation, developmental evaluation (DE) has emerged as a useful option because it can be used at the beginning, or developmental phase, of a new or adapted process, service, or program where the way to achieve the desired outcome is unknown or where the context in which the process, service, or program is delivered is continually changing (Patton, 1994; Preskill & Beer, 2012). DE is a form of program evaluation that examines programmatic or project activities by focusing on context and relationships. With a deep understanding of program context, DE allows for adaptively responding to changing or emerging circumstances.

DE is a reframing of traditional evaluation, which Michael Patton (2010) described as having eight interconnected principles. These principles were developed from his work in the field and with evaluation colleagues.

1. The ***developmental purpose*** frames, focuses, and supports learning about how the program is being developed. The nature of program may be a) the creation or invention of a new program, b) the ongoing adaptive development of a program in a continually changing environment, c) the replication of an existing program in a new context, d) developing a rapid response to sudden crisis or change, or e) enabling systems change.
2. Attention to intended use by its intended users is a focus from beginning to end, facilitating the evaluation process to ensure ***utilization***.
3. ***Systems thinking*** is essential for conceptualizing, designing, and drawing conclusions.
4. There is recognition that evaluation is taking place in a ***complex system***. As such, the plans, goals, and targets of the evaluation may need to evolve as findings emerge and the perspectives of stakeholders change.
5. The evaluation ***rigorously*** supports learning about what the program could/should look like by asking stakeholders probing questions about what works for whom and in what circumstances. It is an emergent and adaptive design that customizes and contextualizes methods, and data collection techniques fit the complexities of the situation and are credible, responsive, appropriate, and reflect the questions of the stakeholders. Data collection techniques may include interviews, surveys, and focus groups.
6. Developmental evaluators embrace ***co-creation*** with key stakeholders to conceptualize, design, and carry out the evaluation. All suggested adaptations to the program are informed by feedback from the system (e.g., stakeholders, end-users) it is trying to change.
7. There is ***timely feedback*** to inform ongoing adaption as needs, findings, and insights emerge, rather than only at predetermined

times. Feedback includes reflection-in-action, the intentional recording and documenting of what is being learned as projects are implemented.

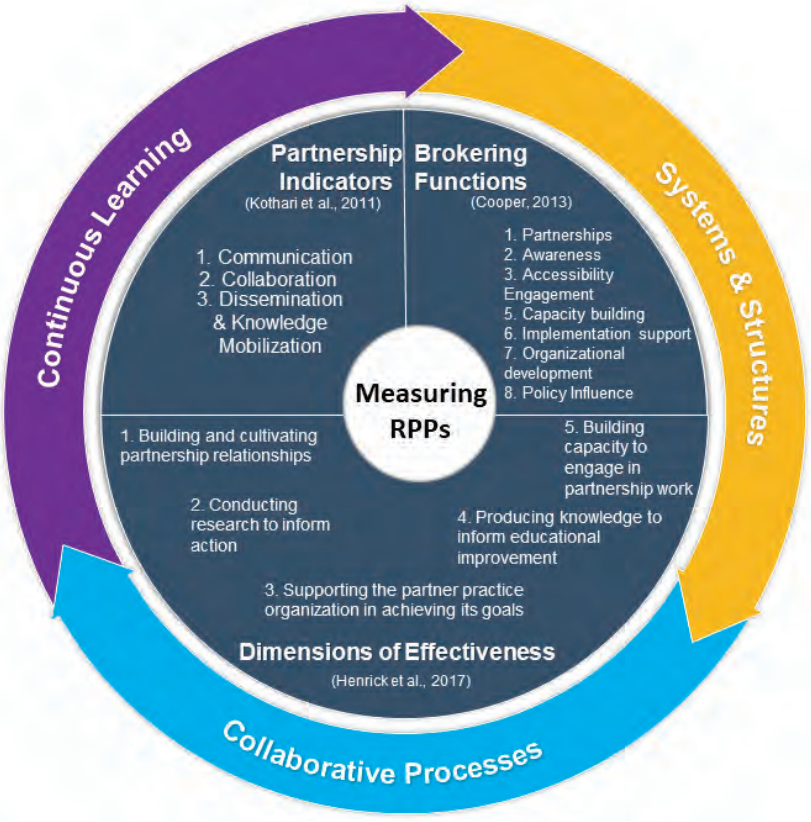
8. The focus is not on results but on continuous learning to understand a) the evolving context of the initiative, b) making informed decisions, and c) taking action when needed to improve the ***innovation process***.

To be successful, DE requires organizational leadership with a relatively high level of risk tolerance, flexibility, and the ability to cope with ambiguity. Ideally, there is a genuine interest in and commitment to using evaluation findings to make necessary changes to develop the initiative. In addition, the organizational culture will have a developed support network for innovation and continuous learning with sufficient resources (e.g., time, people, and money) for ongoing inquiry. Finally, as the ultimate goal of DE is learning, organizational leaders need to be committed to ensuring that evaluation findings are accessible to internal and external stakeholders (Preskill & Beer, 2012).

A learning framework for RPPs

The learning framework described here blends the emerging work from the field (see Figure 2). The centre of the framework incorporates the metrics and categories from Henrick et a. (2017), Kothari et al. (2011), and Cooper (2013), with the outer ring showing structures and systems, collaborative processes, and cycles of continuous learning. This study compared the metrics being used by the four RPPs to each of the frameworks, before conducting interviews with policymakers and RPP leads to explore their perspectives on systems and structures, collaborative processes, and continuous learning. This is called a learning framework, rather than an evaluation framework, to underscore the purpose of developmental evaluation.

Figure 2. A learning framework to explore RPPs: Dimensions of effectiveness, partnership indicators (early and mature), brokering functions, systems and structures, collaborative processes, and continuous learning



Methodology

Sample selection

Purposeful sampling is widely used for qualitative research (Palinkas, Horwitz, Green, Wisdom, Duan, & Hoagwood, 2016) to select information-rich cases to study (Patton, 2002). The current study examines a jurisdiction in North America that has spearheaded an initia-

tive to build evidence networks for education systems along priority areas. The initiative emerged over multiple phases. The network development phase, however, began in 2015 and all four networks are still active in 2020. Each of the four interrelated RPPs were selected from the same K–12 education system, with a population between 12 and 15 million people with approximately 125,000 teachers serving over two million students. Each RPP is cultivating partnerships across four types of organizations: research organizations (universities), practice organizations (school districts), policy organizations (ministries/state education agencies), and community organizations. A brief description of each RPP is provided below (see Table 1).

Table 1: Characteristics of RPPs included in the study

	RPP 1: Sycamore Network	RPP 2: Birch Network	RPP 3: Spruce Network	RPP 4: Willow Network
Funding	Governmental funding	Governmental funding	Governmental funding	Governmental funding
Governance	University leads (3 researchers from same institution) • network manager	University leads (3 researchers from 3 different universities) • governed by executive committee and advisory panel	School district lead	University leads (2 researchers from 2 institutions) • network manager at each university
Partners	16 universities 18 school boards 10 community organizations 2 policy partners*	15 universities 16 school boards 21 community organizations 1 policy partner*	5 partnership organizations spanning both university/ practitioner organizations	coordinating role across the other three networks managing cross-network learning, amplifying resource distribution, and providing capacity-building opportunities
Priority Areas	6 priority areas	4 priority areas	4 pillars	N/A
Organization	Geographic regions	Priority area	Cross-sector collaboration (health/education)	Liaison between policymakers and RPPs

*Policy partners include state education agencies and/or governmental ministries

Researchers relationship to the RPPs

The principal investigator and research team were commissioned by the governmental funder to evaluate the RPPs included in this study.

Data collection and analysis

Network impact metrics

Document analysis ($N = 18$) of annual reports and related materials (e.g., implementation plans) of the four RPPs from the 2016–2017 and 2017–2018 school years was conducted. To ensure reliability and a systematic process to analyzing metrics from each RPP, a coding manual defining the indicators for each of the three analytic frameworks—Cooper (2013), Kothari et al. (2011), and Henrick et al. (2013)—was created. Jessica DeCuir-Gunby, Patricia Marshall, & Allison McCulloch (2011) high-

light that codes emerge from three major areas: "Codes can be developed a priori from existing theory or concepts (theory-driven); they can emerge from the raw data (data-driven); or they can grow from a specific project's research goals and questions (structural)" (pp. 137–138). The coding manual was theory-driven (using metrics arising from the literature review and structural in relation to the research goals). Kathleen MacQueen, Eleanor McLellan-Lemal, Kelly Bartholow, & Bobby Milstein (2008) suggest six potential elements for each code: 1) a code name/label, 2) a brief definition, 3) a full definition, 4) inclusion criteria, 5) exclusion criteria, and 6) examples. This codebook included three of these elements—a code, a brief definition, and examples—as well as a purpose statement outlining the rationale for using each of the three analytic frameworks. For instance, by using Kothari et al.'s (2011) framework, the proportion of metrics that related to early versus mature partnership metrics in use across the four RPPs was assessed. Two rounds of analysis occurred. Initially 138 metrics were extracted from the RPP reports and implementation plans. After these were coded in NVivo and entered into an excel spreadsheet, the study team met to confirm their relevance; this resulted in 13 metrics being excluded. After this second round of analysis, 123 metrics were included for further analysis using the Cooper (2013), Kothari et al. (2011), and Henrick et al. (2017) analytic frameworks (see Appendix A for a full list of the indicators).

Interviews

Purposeful sampling was used for interviews to explore the perspectives of the leaders of the RPPs involved in planning, decision-making, and implementation. These individuals were considered as key informants who were especially knowledgeable about the phenomenon of interest (Cresswell & Plano Clark, 2011). The goal of the interview process was saturation: interviewing participants until no new information was obtained (Miles & Huberman, 1994). Each RPP included multiple leads that straddled research and practice organizations and formed the foundation for partnerships along priority areas identified by the policymakers of the jurisdiction. Recruitment invitations were distributed via email. Appendix B includes the interview protocol. Fourteen one-hour, semi-structured interviews were conducted with network leads (N = 11) and policymakers (N = 3). Policymakers were included as this initiative focused on collaboration across four areas: research, policy, practice, and communities. Each interview was recorded and transcribed verbatim prior to being uploaded into NVivo. Interviews were coded to ascertain similarities and differences among the RPP leads and policymakers. Deductive and emergent coding techniques were utilized, including identifying major categories of systems and structures (which systems and structures were needed to cultivate impact?), collaborative processes (what impact were collaborative processes having and where could they be improved?), and continuous learning (how was capacity building and adaptation addressed within each RPP?).

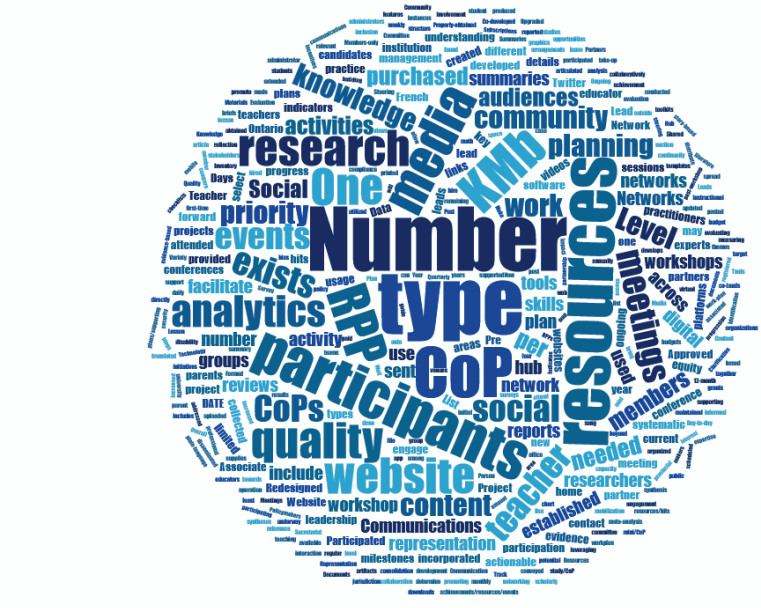
Findings

Diverse metrics were being used to measure the work of RPPs

A document analysis was conducted of data reported across two school years in 18

annual reports and implementation plans to extract impact metrics and assess commonalities and differences among the networks. In total the four RPPs were found to be using 123 metrics (see Figure 3): Willow Network (*N* = 40); Birch Network (*N* = 43); Sycamore Network (*N* = 29); Spruce Network (*N* = 13).

Figure 3. Word cloud of 123 metrics in use by RPPs

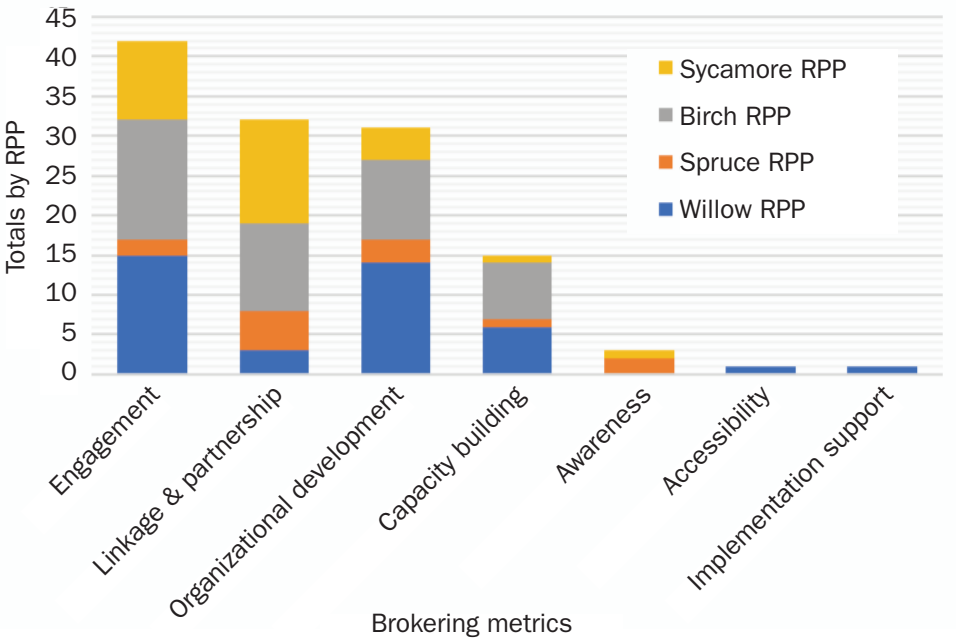


Predominantly, metrics related to counts and quantities of events, partnerships, participants, and resources. Very few metrics and reports dealt with the quality of interactions. The metrics being used by the four RPPs were analyzed in relation to the three frameworks arising from the literature review in order to assess which were the most pervasive and which areas were not represented.

Brokering metrics being used by RPPs

RPPs were collecting a range of metrics to assess engagement, partnership growth, as well as reach of their efforts through web analytics and social media (see Figure 4).

Figure 4. RPPs metrics analyzed in relation to brokering functions

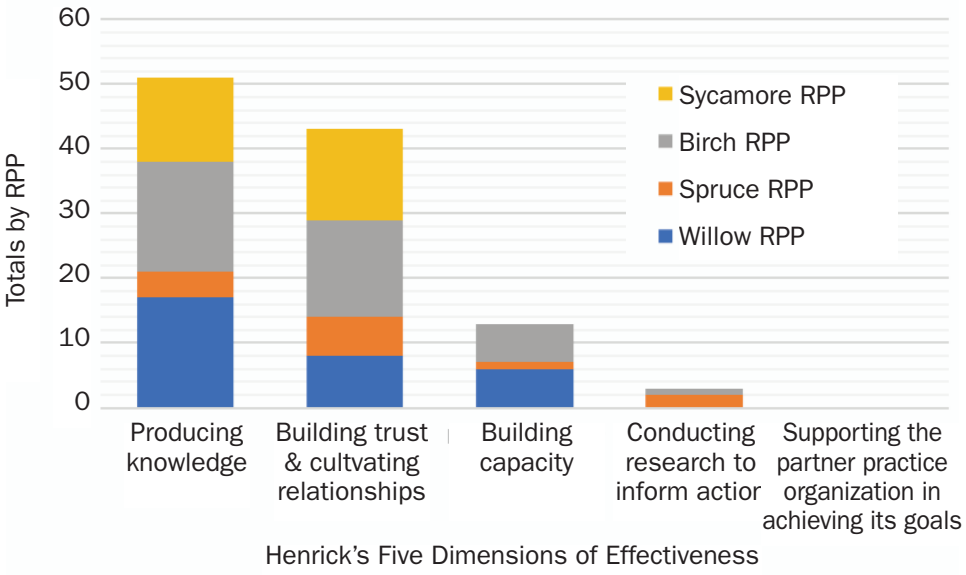


Metrics utilized in order of prominence included: engagement (33%), linkage and partnership (26%), organizational development, and capacity building (12%). Very few metrics addressed increasing the awareness of a particular evidence base, increasing the accessibility of research, or the implementation support. Not one metric was related to policy or policy impact.

Henrick's five dimensions of effectiveness

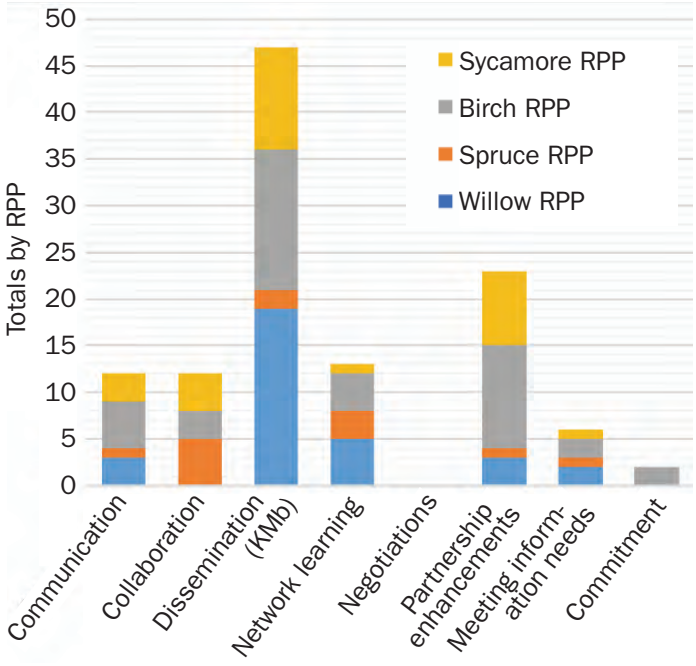
The current study also analyzed the metrics being used by the RPPs in relation to Henrick et al.'s (2017) framework (see Figure 5).

Figure 5. Metrics being used by RPPs analyzed in relation to Henrick's framework



Most of the metrics in use by the four RPPs related to producing knowledge and products (46%), building trusting and cultivating relationships (39%), and building capacity (12%). Only three percent of metrics related to conducting research to inform action, which is not surprising since the focus was not on conducting new empirical research but on disseminating and applying what is already known. No metrics in use related to supporting the practice organization in its goals; however, the goals of the broader networks were co-produced alongside practitioners.

Figure 6. Metrics being used by RPPs analyzed in relation to Kothari's partnership dimensions



Kothari's framework assessing early and mature partnership indicators

Kothari et al.'s (2011) framework explores three general partnership dimensions—communication, collaboration, and dissemination (this category was expanded to include knowledge mobilization efforts)—as well as early partnership indicators (network learning, negotiations, partnership enhancement) and mature partnership indicators (meeting information needs, commitment, and level of

rapport). The metrics from the four RPPs were analyzed in relation to Kothari et al.'s (2011) dimensions (see Figure 6).

Just under half of the metrics being used by RPPs (41%) traced dissemination and knowledge mobilization efforts with stakeholders. The next most prominent category was partnership enhancement (20%), an early indicator, followed by network learning (11%), collaboration (10%), and communication (11%). The mature indicators of meeting information needs (5%), commitment (2%), and rapport (0%) were less represented across the sample.

Comparing indicators across the four RPPs

An analysis was conducted to categorize and compare common metrics across all four RPPs (see Table 2).

Table 2. Common metric categories

Metric	Count	Sycamore	Birch	Spruce	Willow
Number, type, and quality of tools and resources	19	√	√	√	√
Number and type of participation by different groups during events	13	√	√		√
Number and type of representation/ participation by relevant partners	12	√	√	√	√
Creation of planning documents	8	√	√	√	√
Number and type of events	7	√	√		√
Social media analytics	6	√	√		√
Website analytics	6	√	√		√
Creation and upkeep of website	6	√			√
Number and type of meetings with key partners	5	√	√		
Pre- & post-workshop indicators to compare knowledge and skills before and after event	4		√		√
Technology purchased to allow for daily operation	4				√
Produce (by both research partners and external research) high-quality and relevant evidence on focal problem	3	√		√	
Social media analytics used in planning and reports	3				√
Communications sent to network partners	2				√
Participating partners/organizations provide capacity-building opportunities to team members	2		√		√
Partners have a shared understanding of problems/strategies/activities being undertaken	2			√	
Partners routinely work together/collaborate	2		√	√	
Subtotal: Common metrics	104				
Unique metrics	19	3	6	2	8
Total	**123**				

While the metrics were not exact, there were many similar types of metrics in use (see Appendix A for all metrics from the four RPPs in relation to these categories). Unique metrics also existed (see Table 3).

Table 3. Unique metrics in use by networks

Metric	Network
Number, type, and quality of partner networks and equity activities	Sycamore
Variety of venues to researchers, practitioners, policymakers, teachers, parents, and community groups	Sycamore
Evaluation structure	Sycamore
Number of extended projects	Birch
Number of potential leveraging grants	Birch
Personnel hired	Birch
Level, type, and quality of evaluation activities	Birch
Data analytics from practitioner resource website	Birch
Formed communities of practice (CoPs)	Birch
Summaries of CoPs' current work	Spruce
Make arrangements for engagement meeting	Spruce
New skills are incorporated into networks	Willow
Communications sent to the public	Willow
Incentives and paid leave provided for participants	Willow
Network has made use of a select number of social media platforms to engage priority audiences, promoting network achievements/resources/events	Willow
Properly obtained graphics obtained to support resources and tools	Willow
Use of a select number of social media platforms to engage priority audiences, promote network resources and events	Willow
Day-to-day usage of office supplies	Willow
Documents and supporting resources were printed and utilized	Willow

Some of the unique metrics do focus on the quality of interactions as well as the sustainability of funding and extension of projects beyond initial RPPs. One metric also explores how "new skills" are integrated into networks; however, no mention was made on how this would be evaluated or reported on. There were also a few metrics that related to the evaluation structure, as well as the level, type, and quality of evaluation activities.

Interviews

This study organizes how network leaders and policymakers conceptualized and understood impact in relation to the outer circle of the evaluation framework: systems and structures, collaborative processes, and continuous learning (see Figure 7).

Figure 7. Key factors and impacts emerging from interviews in relation to systems and structures, collaborative processes, and continuous learning

The following sections will go over interview data for each of these dimensions and impacts.

Collaborative processes: Shared goals and mutualism as impact

Collaborative processes are central to the success and impact of a network and include communication, trusting relationships, brokering activities, among other dimensions. Participants spoke about a range of impacts, including new partnerships, partnerships involving diverse stakeholders (especially those including groups that historically have been excluded), and shared goals that were arising from the initiatives in their jurisdiction.

New and diverse partnerships as impact

The most important factor to galvanizing impact in school districts, according to network leads and policymakers, was establishing multi-stakeholder partnerships that spanned four areas: research, practice, policy, and community end-users. Establishing collaborative networks was seen as a precursor to galvanizing large-scale change in K–12 school systems. As one participant highlights: "In order for us to really create impact or change in the sector, the three communities need to work closely together—the policy and program community, the researchers, and the practitioners." Historically, since these groups had not traditionally worked together, this development in and of itself was seen as a major impact of RPPs.

Participants recognized that traditionally research, government, and schools have been siloed. RPPs primary goal was to change those traditional structures. A policymaker articulated: "The goal … is multi-partners, so in terms of those working in

the research space, practice space, and the policy space knowing full well that those three can be interchanged within the roles, but typically, policy space gets defined under the [government]; practice space under school districts and research space under the academy. Our goal … really is going forward that that space is more fluid as a natural way to move forward. The idea that we all need and have different expertise. Can we capitalize on each other's expertise? What are the best practices that are occurring in the field and supporting teachers, supporting students?"

Improved student achievement as impact

At the centre of this recognized need for collaboration was the shared goal of improving the use of research evidence to increase student achievement. As one participant noted, "The heart and soul of [our RPPs is] really to try to strengthen, build, improve, develop knowledge mobilization capacity across the education sector with very different and diverse education stakeholders but with the ultimate intent of using evidence more strongly in teaching and learning and improving classroom experiences for students and, ultimately, student achievement."

System alignment as impact

Across different schools and districts, participants highlighted that while they faced similar challenges, they were siloed and often recreating the wheel. A network approach to school improvement was seen as an opportunity to reduce duplication, aggregate efforts, and spread best practices at scale. As one network lead described, "The main goals has been to take all the pockets of good work and research that are happening across the province and bring them together in the various networks and then more specifically to subject areas through the CoPs. You know, so that, one, we are bringing together, you know, all of the knowledge and not everyone working in their own silos and not duplicating work, and then, two, so that we can try and work on spreading the good work to other parts of the province."

Systems and structures

Joint work as impact

Opportunities for joint work were divided into three categories: working within RPPs networks, working across RPPs networks, and working with organizations external to the initiative to develop new funding streams. Networks utilized similar approaches to engaging in joint work with diverse stakeholder groups. Each network develops and supports the vision, mission, and strategic plan of the network through an executive leadership team. Members from these committees include representatives from associations, organizations, or institutions who actively contribute resources to meeting the strategic plan of the networks. Many participants also discussed the importance of building on events already happening in order to not overburden the system and key stakeholders. One stakeholder explained how they organized their most recent executive meeting:

> They [network partner] managed to rent the facility for an extra day where they were having their conference, a number of people that would have been attending that meeting were there anyway … So

> it just simplified things and we spent a full day with a facilitator doing strategic planning.

Advisory panel representatives include school boards, universities, professional organizations, and leaders from communities of practice (CoPs). As one participant articulated, the purpose of these meetings to is "provide updates to each other on what our groups are doing" and to discuss "what they intend to do over the next six months to a year." Representatives from CoPs also meet with executive committees as part of advisory panels or separately to promote the cross pollination of ideas:

> Some of the CoPs didn't really know what to do and then other CoPs had a better idea, so we'd kind of be like, well this is what they're doing as an example, and like you can connect and talk to each other. So we do have CoP lead meetings where we bring together the different CoP leads and our executive.

Key informants from networks explained that it was essential for individuals who sat on executive or advisory panels to have decision-making capabilities within their own organizations in order to reduce structural barriers in reaching front-line staff (e.g., school board representatives should have the ability to allow teachers to be released to attend workshops hosted by the network).

Sustainability as impact

While network leads articulated a range of impacts, they also highlighted challenges around funding and saw sustainability as a major concern for partners. The theme of sustainability emerged consistently across all participants. For example, two participants said:

> I think success would be to see sustainability in the work being done so that it can carry on, with or without us, in the future. There has been a lot of hard work and energy that has gone into the development of these networks, so having their work be sustainable would be a real success.

> Is [there] a way to create or find sustainability in this type of approach so that you have different partners seeing the benefit of it, the value of it, who are willing to contribute to this kind of work? Whether it's school boards, universities, organizations, we see the benefit of it for students, teachers, and parents across the province and want to continue this type of work, this type of network approach.

Some networks reported they are working with partner organizations to secure outside sources of funding. In addition, one network representative highlighted they often leveraged funding from research studies that are aligned with network goals. These quotes show that networks are working to leverage external sources of funding to support network goals, though participants were unclear as to whether this external funding would be sufficient to cover all network needs.

Demand from practitioners as impact

Key informants from the thematic networks reported sharing knowledge is not only about communicating the stories of the RPPs, it is also about getting diverse stakeholder groups to work together and inspiring action. Key informants highlighted networking, and in-person events provided the most promising opportunities for knowledge sharing. One stakeholder highlighted that connecting with and obtaining "buy-in" from individuals during the beginning phases of the network development was the "biggest challenge … how do we make people realize that that's what we're really here for, and the advantage of it?" Representatives from the network reported that they were able to increase "buy-in" from practitioners by "addressing needs that teachers have," as one participant put it. In addition, a representative from the same network noted that it was important to show practitioners they were not "going to try and change everything because schools, school systems, and teachers do a really good job in a lot of areas" and that the network was "going in with the mindset of we want to learn along with you." Educators, schools, and school districts have responded positively to this approach, and new connections are being made: "so we have school districts contacting us and saying, can we come and see?" Many network leaders discussed the success of RPP impact in terms of growth: "I think success can be monitored in terms of reaching goals and seeing growth in the network. And in the last two years that I've been with [the RPPs] the growth has been astronomical." A stakeholder from another network noted that connecting with provincial professional organizations created opportunities for the network to engage with teachers: "I connected them up with the teachers' union … to get some teachers to participate in focus groups and in co-creation and materials … as part of this new project." In addition, network representatives reported offering workshops on content that is relevant to practitioners, creating brief and jargon-free written resources targeted toward specific audiences, developing informative videos, and using online knowledge sharing strategies such as websites and social media.

Equity as impact

Expanding RPP's approaches to KMb to improve visibility does not mean current efforts have been unsuccessful. One network member noted:

> Not only have we been successful as a team to be open and transparent, and constantly critical of our own biases and assumptions, we've succeeded at creating spaces where stakeholders in equity can be included … [to] disrupt the larger narrative and learn together.

RPPs appear to be visible within their partner groups, and by expanding current KMb efforts, network members felt this visibility could be improved. Key informants were mindful, however, that gauging improved partner awareness of the initiative will need to appreciate the time-lag nature of impact.

Continuous learning

Capacity-building as impact

RPPs were leading their own capacity-building efforts within each network tailored specifically for their priority topic areas and stakeholders. When asked to identify

areas where further learning could occur, network participants listed three areas where capacity building was still needed: 1) networks (growth, spread, benefits, and the drawbacks of breadth versus depth), 2) knowledge mobilization (best practices, current evidence on what works, how to measure these efforts), and 3) implementation (support for work on the frontlines with teachers and students in classrooms).

Participants highlighted that the initiative had created opportunities for the four RPPs to meet to discuss and learn from the wider initiative, and these events were predominantly considered positive by participants. Network members noted that more cross-network meetings need to occur to further develop network capacity and trust. Network participants also highlighted that an opportunity to improve these learning opportunities was to involve network leads and CoP leads prior to the event—in the initial planning stages—to co-produce priorities and activities that would better address the needs of what was happening on the frontlines. For example, a network representative noted, "every meeting that we have or we've been brought together has been really rushed." Stakeholders from across the networks also highlighted that while there have been opportunities to report on network activities at cross-network events, there has not been enough intentionality around professional development and building connections to allow networks to work together as a cohesive unit to share and learn with each other. One network member stated, "It was show and tell. It was sharing. There wasn't any professional learning for us about knowledge mobilization which is what I'd expect." Providing intentional opportunities to build stakeholder capacity and build trust will serve to further strengthen the RPP initiatives. Future cross-network learning opportunities should go beyond reporting on network activities and allow for network members to learn promising practices from each other.

Reach as impact

Network leads talked about how RPPs had successfully brought together education stakeholders at a variety of levels:

> Jurisdictional: "It's learning about the innovation that's happening across the [jurisdiction], I think that's what I see that's really sparking people in this [initiative]."
>
> Nationally: "We've received high interest and engagement in the initiatives of [the network] throughout [the country]. I have received emails from people in other [jurisdictions] … all expressing interest in getting involved or learning from what we're doing."
>
> Internationally: "The partners, especially the university partners, have reached well beyond [North America]. So, projects that I have include Brazil, Australia, the U.S., the U.K., and from across Canada."

Many RPPs were building partnerships and disseminating the learning from their work beyond their local context, often to national and international networks of scholars and practitioners working on similar priority areas.

Sharing stories as impact

All network leads thought sharing stories was critical to both growing the networks and to articulate impacts. As one participant noted:

> So bringing that spotlight and sharing those stories is a way in and of itself that can benefit the network because as you're building those connections, there's more than one to be involved [in] or there are more people who might want to have thoughts on other approaches for [the networks].

While many shared exemplary cases of what worked within a school, there were also network leads who saw the benefits of exploring what did not work. One network lead said:

> What's the priority here? The major question we focused on was not only why do you do this work, but what barriers do you see? What challenges exist? What are we struggling with? What are we not being successful at? I think we struggle with that, as academics specifically [and], more than anything, researchers. I think we struggle with admitting our failures.

Sharing exemplary cases is common, less common is the ability to explore failure as a learning mechanism.

Adaptability as impact

The network leads brought up two factors that contributed to continuous learning: the need to be able to discuss failure and what does not work critically, openly, and honestly, and to be nimble and able to pivot when implementation in schools is not working. One lead recounted that:

> My priority is how does this become a living, breathing thing that's fluid and that's constantly being evaluated, criticized, and bettered, and that we can openly discuss what challenges we're facing with each other, outside, so on and so forth.

This was echoed across leads. While sharing exemplary cases was seen as a strength, they talked about the need for venues to crowdsource solutions to common challenges and to be able to learn from initiatives or pockets of work that were not working in schools to try to identify the differences between the successful efforts and those that were falling flat with end users.

Discussion

The discussion is organized in relation to the learning framework used in the study beginning with the strengths and weaknesses of: metrics in use, systems and structures, collaborative processes, and continuous learning.

The development of higher quality and more robust metrics needed to capture the richness and diversity of RPPs

The need to develop frameworks and specific indicators for RPPs is a consistent call from the field (Cooper, Shewchuk, MacGregor, Mainhood, Beach, Shulha, & Klinger,

2018; Farrell et al., 2017; Henrick et al., 2017; Penuel et al., 2015; Tseng et al., 2017). In fact, other than the learning framework, the only framework and set of indicators designed specifically for RPPs is that of Henrick et al. (2017), although Farrell et al. (2017) also conducted an evaluation of RPPs in the U.S. While metrics have not been applied to RPPs extensively, there is work across other sectors to suggest metrics for capturing impacts related to research use and its influence in complex systems are underdeveloped (Wilsdon, Allen, Belfiore, Campbell, Curry, Hill, Jones, Kain, Kerridge, Thelwall, Tinkler, Viney, Wouters, Hill, & Johnson, 2015). In fact, Wilsdon and colleagues (2015) highlight the real danger in using metrics that are clearly underdeveloped in high-stakes accountability structures where funding might be dependent on impact and therefore stripped for not adequately describing high impact. The metric analysis presented in this article, including an exploration of the 123 (Table 2) metrics in use for four large-scale RPPs still make a valuable contribution to the field, even if the metrics themselves are in their infancy, due to the fact that very little is known about how RPPs are measuring their work across diverse partnerships and contexts. These metrics provide a starting point for a deeper discussion on the quality and whether or not they can capture the work happening across diverse partnerships.

Systems and structures

RPPs were having impact and increasing diverse partnerships across the jurisdiction. Similarly to Farrell et al.'s (2017) findings, participants spoke positively about their experiences being involved in RPPs. Not only were networks inundated with requests from school boards to participate, some of the networks could not meet the demand for the work in classrooms and schools. This demonstrates the impact of the RPPs and also a desire for these types of initiatives within school districts to further support teachers with evidence-based strategies. While policymakers were considered partners in the RPPs from this jurisdiction, metrics and narrative accounts of how to assess and measure those contributions were not shown in the data; in fact, not one metric addressed policy influence or considerations. This is an area where more work is needed and would be fruitful as much of the priorities in schools are set within a broader policy context that should not be ignored. Since few initiatives even include policymakers as partners, it is not surprising that more work is needed to establish best practices and strategies to optimize those interactions. Power was cited, not as a barrier but as something that must be carefully considered due to policymakers often being characterized as funders. This is consistent with other empirical work in this area (Penuel et al., 2015; Turley & Stevens, 2015). In this study, RPPs were acutely aware that funding decisions for their networks reside within the government and, as such, the dynamics around interactions and co-production have implications for this kind of work.

Collaborative processes

Collaborative processes were different depending on the composition of the participating organizations, but all four RPPs discussed needing more time and resources to do substantive work. Resources were also discussed in relation to scaling up and

meeting the needs of more schools across large school districts. Sustainability and further funding were also considerations of RPPs. While school districts were highly engaged with many of the networks, the priority area affected access in some cases (math was an area schools wanted help in, but schools were hesitant to engage in equity issues). Across the sample, community organizations were not represented as heavily as practitioners; however, this data looked at the leadership level, so perhaps drilling down to the communities of practices would show different results. The speed of practitioners' needs, versus the time it takes to do research, still represents a complex challenge—even when using developmental evaluation. Networks often wanted data on issues faster than the research team could produce it. Farrell et al. (2017) highlight this issue of synchrony as an area that needs more work for RPPs to continue to improve on the positive work happening across the education sector.

Continuous learning

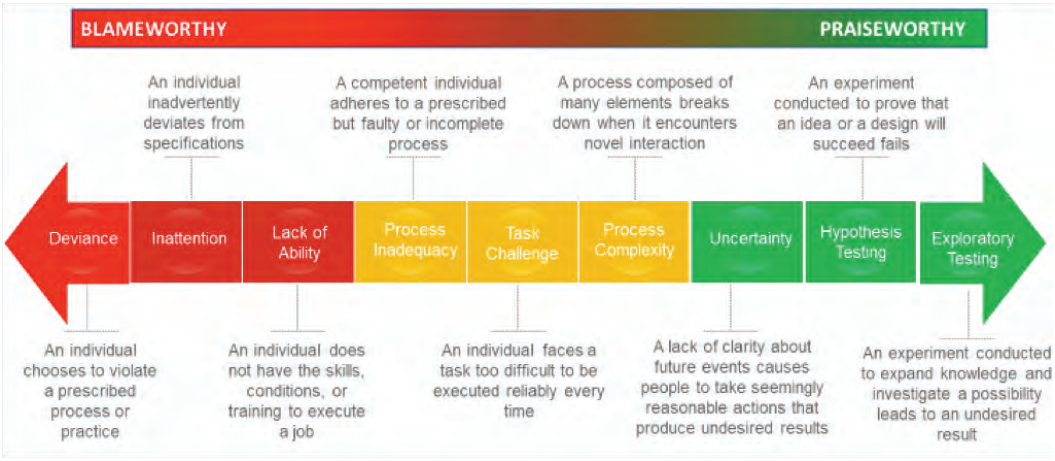
Developmental evaluation is a promising approach and it has the potential to support and influence dynamic cycles of continuous learning. It encourages adaptive decision-making (Patton, 2010; Peurach, Glazer, & Lenhoff, 2016). Programs such as knowledge networks have multiple stakeholders whose participation is fluid as people come and go, work together, and disconnect and reconnect with other. Each of these stakeholders and their interactions can influence the way the program is conceptualized, shaped, and operationalized. Moreover, mapping cause-and-effect relationships is difficult and often unmanageable. Small actions or minor decisions, even those out of the control of key stakeholders, can have a significant impact on program processes and outcomes. Under these conditions the program decision-making must be adaptive. DE encourages sensitivity to how individuals who connected to a program choose to participate and why they wish to influence or control decision-making. Using social network analysis, and feeding that data back into the system to make decisions about network planning and resources, is a fertile methodology that needs further attention (although scholars are employing social network analysis to explore evidence use, see Coburn, Mata, & Choi, 2013; Daly, Moolenaar, Bolivar, & Burke, 2010; Farley-Ripple & Buttram, 2014; Penuel et al., 2015).

Looking at cases of failure can be instructive

While initiatives often focus on exemplary cases, two participants in this sample highlighted the need to look at cases of what was not working. And while these perspectives were not representative across the sample, those ideas are interrogated here. Many of the networks highlighted exemplary cases of reach and impact while, to a lesser extent, mentioning some of the things that were not working (for instance, gaining access to schools when addressing topics of equity, such as racism, was more difficult than gaining access to work on math instruction). While exemplary cases should be celebrated—especially due to the scale and complexity of the partnerships studied in this jurisdiction—other network leads put forth that having critical discussions and being open to change based on those discussions was an important mechanism of network development. The business sector has a body of research that focuses on learning from failure (Edmonston, 2011). Amy Edmonston (2011)

argues that many failures (depending on why the failure occurred) are actually praiseworthy, as they show innovative approaches to working together and trying to solve complex problems. Her continuum of failure shows diverse reasons for failure that move from blameworthy to praiseworthy (see Figure 8).

Figure 8. Adapted from Edmonston (2011): A spectrum of reasons for failure



In order to understand more clearly the impacts and influence of RPPs, further research should consider cross-case comparisons of exemplary cases and failed cases to see what can be learned from similarities and differences that might emerge from those two samples.

Conclusion

RPPs represent significant investments by governments to achieve educational improvement. RPPs are resource intensive to build and sustain. However, it is through these sustained efforts that deep, trusting relationships necessary to galvanize large-scale change and system alignment can be fostered. This study showed four networks deeply engaged in this work for the benefit of students and communities. Networks talked about the fact that measuring impact was essential to informing their work and deciding how to target resources. Despite the challenges of the networked design, key informants were adamant that this initiative had enabled opportunities and outcomes for educational improvement that would otherwise have been unachievable. The structure of RPPs has enabled network members to move from disparate pockets of success to large-scale coordinated efforts at school improvement. It was clear to key informants that RPPs had been successful in connecting diverse education stakeholders. More work is needed to continue to assess how best to measure and articulate impact across diverse networks spanning not only many different stakeholders but also a range of different school districts and community organizations.

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Appendix A: Metrics in use by four RPPs in North America, organized by common categories

Common metric: Number, type, and quality of tools and resources

Count	Network	Metric
1	Number and quality of tools and resources	Sycamore
2	Number, type, and quality of student- and parent-led resources developed	Sycamore
3	Number, type, and quality of summaries uploaded onto digital hub	Birch
4	Number, types, and quality of videos created	Sycamore
5	Four or more briefs developed	Spruce
6	Lesson plans/supporting resources	Birch
7	Materials to distribute at events, conferences, networking sessions	Willow
8	Number of artefacts posted	Birch
9	One article per CoP for each of the target audiences (practitioners, scholarly community)	Birch
10	One case study/CoP	Birch
11	One plain-language summary per CoP	Birch
12	One research mini per CoP	Birch
13	One research syntheses from each of the four CoPs	Birch
14	One story-based research mini	Birch
15	Resources, web content, communications and other content are translated into French as needed	Willow
16	Increased amount of French content has been created and disseminated	Willow
17	Tools and resources are produced and literature reviews conducted	Willow
18	Up to one research song	Birch
19	Inventory of current knowledge products	Spruce

Common metric: Number and type of participation by different groups by during events

Count	Metric	Network
20	Number and type of participation by different groups (teacher candidates, teachers, administrators, parents, students, community members) in Lead Associate Teacher Days	Sycamore
21	Number of participants from different groups participating in events	Sycamore
22	All members of the secretariat attended workshop	Willow
23	Number of administrator participants	Birch
24	Number of first-time teacher participants	Birch
25	Number of math teacher-led participants	Birch

continued

Count	Metric	Network
26	Number of participants outside of the CoP	Birch
27	Number of partner participants	Birch
28	Number of teacher participants	Birch
29	Number of teacher participants who have participated in other provincial initiatives beyond CoPs	Birch
30	Number of university member participants	Birch
31	Secretariat members attended conference	Willow
32	Quality of interaction among participants	Sycamore

Common metric: Number and type of representation & participation by relevant partners

Count	Metric	Network
33	Number of and type of CoP leads and co-leads established	Sycamore
34	Number of members of steering committee	Sycamore
35	Each CoP to have established at least one educator reference group	Spruce
36	Each CoP to include educator involvement as an activity in their work plan	Spruce
37	Level of participation by different groups	Sycamore
38	Level of representation across Ontario	Sycamore
39	Level of representation across relevant partners	Sycamore
40	Number of leads	Birch
41	One meeting with representation from each CoP annually, organized by the network	Birch
42	Representation from all CoPs	Birch
43	Participated in meetings (other than home institution)	Willow
44	Participated conferences (other than home institution)	Willow

Common metric: Creation of planning documents

Count	Metric	Network
45	Approved budgets	Birch
46	Co-developed budget	Spruce
47	Approved KMb plan	Birch
48	Well-articulated knowledge mobilization plan	Sycamore
49	Network progress reports	Willow
50	Plan forward and a plan forward for meetings of the CoPs	Birch
51	Project steering committee develops work plan to guide remaining three years of project	Spruce
52	Twelve-month social media & communication plan exists	Willow

Common metric: Number and type of events

Count	Metric	Network
53	Number and types of events that bring educators, teacher candidates, researchers, and community together	Sycamore
54	Number and type of CoP themes addressed in events	Sycamore
55	Number of scheduled events for each year	Sycamore
56	Number, type, and quality of Lead Associate Teacher Days	Sycamore
57	A space was provided to facilitate the workshop sessions in	Willow
58	One conference per CoP per year	Birch
59	Overall number registered to attend	Birch

Common metric: Social media analytics

Count	Metric	Network
60	Number of social media activities	Sycamore
61	Analytics have been collected and conveyed in regular reports	Willow
62	Level and type of mobile app usage	Sycamore
63	Level and type of Twitter activity	Sycamore
64	Take-up and spread of social media across province	Sycamore
65	Twitter analytics	Birch

Common metric: Website analytics

Count	Metric	Network
66	Number of views of videos on digital hub	Sycamore
67	Number of website hits	Sycamore
68	Number of downloads of resources/hits	Birch
69	Track website hits	Birch
70	Website analytics	Birch
71	Website analytics to determine access and use of tools and resources	Willow

Common metric: Creation and upkeep of website

Count	Metric	Network
72	"Knowledge Hub" exists and may include (but is not limited to) resources such as: links to systematic reviews of research, summaries of research studies, actionable evidence-informed resources such as lesson plans, teaching toolkits, checklists; blogs by priority area experts; resources for measuring KMb impact; bios and contact details for researchers with expertise in priority areas; list and contact details for organizations that work directly with priority audiences	Willow
73	Redesigned website exists and is continually updated for disability compliance	Willow
74	Redesigned website exists for research summaries	Willow
75	Project website is supported and maintained	Willow

continued

Count	Metric	Network
76	Members-only section on the website exists for networks, which may include (but is not limited to): a map of Year 1 KMb milestones and associated activities, a progress chart that indicates the progression of networks toward key KMb milestones, templates networks can use to facilitate their KMb work, resources to draw on in capacity-building workshops, other documents as needed	Willow
77	Number and type of links established on the digital hub	Sycamore

Common metric: Number and type of meetings with key partners

Count	Metric	Network
78	Number and type of meetings with key partners	Sycamore
79	Number and type of virtual meetings	Sycamore
80	Meetings with the partners and other networks	Birch
81	Ongoing meetings with CoP leads	Birch
82	Quarterly planning meetings	Birch

Common metric: Pre- and post-workshop indicators to compare knowledge and skills before and after event

Count	Metric	Network
83	Post activity surveys	Birch
84	Pre- and post-workshop indicators to compare KMb knowledge and skills before and after workshops	Willow
85	Pre- and post-workshop indicators used	Willow
86	Survey results evaluating instructional practice, leadership, achievement, and engagement	Birch

Common metric: Technology purchased to allow for daily operation

Count	Metric	Network
87	Project management software purchased	Willow
88	Subscriptions purchased for file management	Willow
89	Technology purchased to allow for daily operation	Willow
90	Data analysis software purchased	Willow

Common metric: Produce (by both research partners and external research) high-quality and relevant evidence on focal problem

Count	Metric	Network
91	Number, type, and quality of available equity and inclusion research	Sycamore
92	List of areas of interest for knowledge synthesis	Spruce
93	List of meta-analysis or systematic reviews found	Spruce

Common metric: Social media analytics used in planning and reports

Count	Metric	Network
94	Social media and website analytics have been collected and reported in weekly and monthly reports	Willow
95	Social media and website analytics have been used in ongoing social media planning	Willow
96	Social media and website analytics have been used in ongoing social media planning	Willow

Common metric: Communications sent to network partners

Count	Metric	Network
97	Communications sent to networks	Willow
98	Communications sent to stakeholders	Willow

Common metric: Participating partners/organizations provide capacity-building opportunities to team members

Count	Metric	Network
99	Clarification, consolidation, and reflect	Birch
100	Content experts were hired to facilitate professional development in workshops, where needed	Willow

Common metric: Partners have a shared understanding of problems/strategies/activities being undertaken

Count	Metric	Network
101	Increased understanding of work underway by each CoP	Spruce
102	Shared understanding of project	Spruce

Common metric: Partners routinely work together/collaborate

Count	Metric	Network
103	Identification of opportunities to work collaboratively	Spruce
104	Number of instances of collaboration	Birch

Unique metrics

Count	Metric	Network
105	Number, type, and quality of partner networks and equity activities	Sycamore
106	Variety of venues to researchers, practitioners, policymakers, teachers, parents, and community groups	Sycamore
107	Evaluation structure	Sycamore
108	Number of extended projects	Birch
109	Number of potential leveraging grants	Birch
110	Personnel hired	Birch
111	Level, type, and quality of evaluation activities	Birch
112	Data analytics from practitioner resource website	Birch

continued

Count	Metric	Network
113	Formed CoPs	Birch
114	Summaries of CoPs current work	Spruce
115	Make arrangements for initial engagement meeting	Spruce
116	New skills are incorporated into networks	Willow
117	Communications sent to the public	Willow
118	Incentives and paid leave provided for participants	Willow
119	Network has made use of a select number of social media platforms to engage priority audiences, promoting network achievements/resources/events	Willow
120	Graphics obtained to support resources and tools	Willow
121	Use of a select number of social media platforms to engage priority audiences, promote network resources and events	Willow
122	Day-to-day usage of office supplies	Willow
123	Documents and supporting resources were printed and utilized	Willow

Appendix B: Needs assessment interview protocol

Thank you for taking the time to talk with us today, we are really glad to have a chance to talk with you about your network. The purpose of our conversation is to orient ourselves to your network; continue building relationships; and see how we can work together to develop a learning framework.

1. Could you tell me a bit about the main goal of the network as it stands right now?
    a. What are the key aspects of your network?
    b. What activity in the initiative do people seem most animated about?
    c. What issue or opportunity is the network trying to address?
2. What outcome are you trying to achieve? Overall? In the next few months?
    a. Why does the work of your network matter?
    b. Who does it matter to?
    c. Who would you describe as your key stakeholders?
    d. What would success look like in your network?
3. What are the biggest strengths/weaknesses of the group?
    a. How do you cultivate trust within your network?
    b. How are decisions made within your network?
4. In what ways do you interact with stakeholders beyond your network?
    a. Policymakers
    b. Other RPPs
    c. Other key players (practitioners, community members)
5. You are already designing implementation plans and evaluation plans as well as other materials about your network, given these, how could the developmental evaluation support your network?
    a. Are there areas where efforts are being duplicated?
    b. Areas where there could be better alignment and cohesion?
    c. What are you really curious about?
    d. What questions seem to come up repeatedly in your conversations with others in your network or with other leads from other networks?
6. What does the network need to pay attention to as it goes forward?
    a. What are the changes you would like to see as a result of your network?
    b. What feels uncertain about achieving these outcomes?
7. Who else is working on this issue locally and nationally?
    a. How are they connected and/or how should they be connected?
    b. What has already been tried?
    c. What can we learn from past attempts and others' efforts?
    d. What types of relationships do you see as critical to carrying out your work and developing your network?

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How a Networked Approach to Building Capacity in Knowledge Mobilization Supports Research Impact

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Abstract

Research impact is emerging as a common feature in national research systems. Knowledge mobilization (KMb) includes efforts undertaken to aid and accelerate research impact pathways by directing focus to processes that support impact. To date, researchers and universities have struggled to increase their capacity in KMb. This study explores the perceptions held by 16 leaders of Research Impact Canada, representing 14 networked universities, about the usefulness and use of networked learning to build institutional capacity in KMb. The analysis of data, which was collected using a mixed-methods survey design, highlights two overarching themes: 1) the contextual variability in how institutions engage in KMb work, and how practice-based subgroups can support the diverse KMb needs of different institutions; and 2) how capacity is developed through networked learning is distributed among individuals and groups within institutions, and how networked institutions need to be self-referential to the ways knowledge about KMb is sourced, validated, shared, interpreted, and employed.

Keywords Knowledge mobilization; Research impact; Networks; Research institutions; Capacity building

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Introduction

Research impact is emerging as a common feature in national research systems. In plain terms, *research impact* (hereafter, impact) refers to the outcomes of research upon broader society, those "intended as well as unintended, immediate as well as protracted" (Federation for the Humanities and Social Sciences, 2017, p. 4). Some countries such as the UK (Research Excellence Framework [REF]), Australia (Engagement and Impact Assessment [Australia Research Council, 2015]), and the Netherlands (Standard Evaluation Protocol [Koninklijke Nederlandse, n.d.]) have adopted system-wide impact assessment schemes. In other countries, researchers are required to describe the impact of their research in research grant applications and reports. In Canada, these developments are exemplified by a knowledge translation strategy for health research grant applications or a knowledge mobilization (KMb) strategy for social sciences and humanities grant applications. These two systems have been referred to as assessment driven (UK, Australia) and mission driven (Canada), with the latter being driven by researcher, institution, or funder goals (Bayley & Phipps, 2019). At present, there is a proliferation of assessment-driven systems and their associated impact metrics, despite their sizeable and varied costs for researchers and institutions (Williams & Grant, 2018). Few studies have looked elsewhere to approaches garnering success in mission-driven systems.

The present study spotlights the case of Research Impact Canada (RIC), a network of 17 universities (16 in Canada plus the University of Brighton in the UK) that was founded in 2006 to support researchers creating impact in a mission-driven system (RIC, 2017, 2018a). RIC is a community of practice designed to share diverse methods for supporting connections between science (in all disciplines) and society to maximize the social, cultural, health, economic, and environmental impacts of research on local and global communities.

The aim of this article is to present findings from an ongoing case study evaluation of RIC's efforts that illustrate the usefulness and use (Penny Cooper & Associates, 2017) of its network activities to build institutional capacity for KMb. It addresses the following question: To what extent does a networked approach to building institutional capacity for KMb result in learning that is useful and that contributes to the use of KMb concepts in practice? While there is much literature on the public policies that drive the impact agenda and the practice of maximizing impacts in research projects, there is comparatively little empirical evidence on the role of the institution (e.g., policies, procedures, staff, funding). Institutions are the members of RIC and the mission of RIC is to build institutional KMb capacity; hence, the evaluative work presented in this study provides evidence about which efforts to build KMb capacity are useful and contribute to the use of KMb practices for RIC members.

Theoretical perspectives

The article begins by briefly reviewing recent developments in the global impact landscape and describing how RIC is situated in that landscape.

Planning for impact and the development of impact networks

Assessing impact, as well as describing and explaining its relationship with research

use, has mushroomed as a field of study in the past 20 years (Boaz & Nutley, 2019). The most prominent development internationally has been the rise of assessment-driven research funding systems (Milat, Bauman, & Redman, 2015); the UK's REF is the most developed and widely known example. Now approaching its second iteration—the first being REF 2014, which itself built upon the UK's Research Assessment Exercises—REF 2021 will allocate about £2 billion in annual research funding based on a ranked scoring of universities. One-quarter of the score will be tied to each university's ability to demonstrate the wider impacts of its research (Stern, 2016). This model has been catching on; Diana Hicks (2012), for example, identified 14 national performance-based research funding systems for universities: Australia, Denmark, Finland, Norway, Belgium, Poland, Slovak Republic, Sweden, UK, Italy, Portugal, Spain, New Zealand, and Hong Kong. The expansion of these systems has resulted in unintended effects that are still emerging and a cost-benefit balance that remains uncertain (Hodder & Hodder, 2017; Martin, 2011; Terämä, Smallman, Lock, Johnson, & Austwick, 2016). For instance, while it is known that REF 2014 cost the UK higher-education community approximately £246 million to operationalize (about one percent of the UK's total research budget; see Farla & Simmonds, 2015), other costs, such as the narrowing of academic priorities and an increase in research income inequality among institutions, are still emerging (MacDonald, 2017; Pinar & Unlu, 2019).

In contrast with assessment-driven systems and their concomitant focus on measuring impact, mission-driven systems direct focus to the theoretical frameworks that underpin and inform impact pathways. Mission-driven systems do not incur the costs of assessment and maintain greater academic freedom by putting the choice to pursue broader impacts on the researcher, not making it a requirement. Several recent reviews of impact frameworks (see Greenhalgh, Raftery, Hanney, & Glover, 2016; Rivera, Kyte, Aiyegbusi, Keeley, & Calvert, 2017) demonstrate that many find their origins in the Payback Model. Dating back to 1996, the Payback Model has two key features: 1) a seven-stage logic model from topic or issue identification to final research outcomes, and 2) five bins for identifying impact (e.g., knowledge, benefits to policy). More recently, the Co-Produced Pathway to Impact (CPPI; Phipps, Cummings, Pepler, Craig, & Cardinal, 2016) is a framework first published in 2016 (and thus absent from some recent reviews). Unlike frameworks that conceptually model impact pathways and are not intended for use in practice (e.g., Field, Booth, Ilot, & Gerrish, 2014), the CPPI has been adopted, adapted, and implemented by several Canadian research networks, including PREVNet, which co-produced the CPPI for its projects that are achieving impact on bullying prevention. The CPPI sets up a relationship between researchers and other research stakeholders (in its phrasing, co-production partners) throughout impact pathways that is predicated on stakeholder engagement before, during, and after the research has been completed. These relationships between researchers and stakeholders are particularly important within mission-driven systems that focus more on planning for impact (*ex ante*, starting at the beginning and proceeding throughout the research process) than on impact assessment (usually *ex post*, at the end of the research process).

PREVNet is an example of a research network designed to create impacts from research on bullying. Networks designed to create socioeconomic impacts in a specific discipline are ubiquitous. In fact, Canada has a funding program called the Networks of Centres of Excellence (2017) that "offers a suite of programs that mobilize Canada's best research, development and entrepreneurial expertise and focus it on specific issues and strategic areas" (para. 1). In comparison, RIC is a fundamentally different network in that it does not focus on a specific discipline or subject. RIC is a collective of institutions examining their policies, practices, staffing, and services that support researchers and research stakeholders that are working to maximize the impact of research across disciplines. The Advancing Research Impact in Society (ARIS) network is a similar network based in the U.S. but with a focus on the researcher rather than the institution. Moreover, while there are many networks focused on commercialization as an impact practice (AUTM based in the United States, PraxisAuril in the UK, Knowledge Commercialization Australia), RIC and ARIS are the only two networks in the world focused on non-commercial transactions that maximize the impacts of research across all disciplines.

KMb and the case of Research Impact Canada

KMb is concerned with the processes and activities that enable research to inform decisions about public policy, professional practice, and social services. Identified by some as an umbrella term for the sharing of knowledge (e.g., Beckett, Farr, Kothari, Wye, & le May, 2018), KMb has relevance for research from the social sciences and humanities, health, and natural sciences and engineering. At the institutional level, KMb involves a suite of services that work together to support the multidirectional connection of researchers with decision-makers (Phipps, 2011). The foundation of any institutional KMb capacity is thus the connections among researchers and research stakeholders who can take up the results of research and turn them into public policies, professional practices, and social services (Phipps et al., 2016; Beckett et al., 2018).

Founded in 2006 by York University and the University of Victoria, RIC is Canada's KMb network. The 17 institutions currently constituting RIC have joined at various points since its foundation.

> 2010–2011: Memorial University of Newfoundland and Labrador, Université du Québec à Montréal, University of Guelph, and University of Saskatchewan
>
> 2012: Université du Montréal, Carleton University, Wilfrid Laurier University*, and Kwantlen Polytechnic University
>
> 2014–2015: McMaster University and University of New Brunswick
>
> 2017: University of British Columbia, Western University, and the University of Brighton (U.K., first international affiliate member)
>
> 2018: University of Alberta, University of Winnipeg, Dalhousie University, and University of Ottawa

*Note: Wilfrid Laurier and Western University have subsequently stepped away from RIC.

These institutions are a mix of large universities with medical schools, comprehensive universities, and primarily undergraduate universities. Some are located in large urban centres, while others are in small cities and in suburban settings.

In addition to their operational and geographic diversity, member institutions are responsive to local and regional opportunities and constraints:

> Network members all have a different knowledge mobilization approach, portfolio, and capacity. For example, some members have a dedicated unit for knowledge mobilization across campus with multiple staff, while others focus their work on a faculty or college of larger institution, or function as a semi-autonomous centre embedded in the local community. Similarly, RIC member institutions all have individual plans to track their knowledge mobilization work. (Bergen, 2019, para. 8)

Thus, while RIC's member institutions have also been termed KMb units or nodes (McKean & Robbins, 2016), what that means in terms of the different actors and their interactions varies across institutions. For example, institutional KMb services have included research partnerships, support for grant applications, research communications, public and community engagement, engaged scholarship, service learning, student internships, and government relations. It is this heterogeneity among member institutions and their connections with one another that contributes to RIC as a compelling mechanism for building institutional capacity for KMb. Together, they build value for one another by sharing knowledge and resources, reducing uncertainty in the Canadian mission-driven impact environment, enhancing the legitimacy of their practice, attaining collective goals, and expanding interconnections within their local, organizational, and external contexts (Muijs, West, & Ainscow, 2010; RIC, 2018a).

As a network, RIC builds institutional capacity to help Canada's researchers and students span boundaries, collaborate, and connect their work to new services, products, processes, systems, public policies, and innovations with social, economic, cultural, environmental, commercial, and scientific value. The vision of RIC is to become a globally leading network that enables researchers and their partners to demonstrate a contribution to research excellence and outline its impact. The mission of RIC is to build Canada's capacity to be a leader in creating value from knowledge by developing and sharing best practices, services, and tools, and by demonstrating the positive impacts of mobilizing knowledge to relevant stakeholders and the public.

As a community of practice, RIC builds the capacity of its members to support diverse KMb practices. RIC's Professional Development Committee oversees four capacity-building initiatives.

KMb Tools: RIC is capturing the diverse KMb practices of its member institutions, writing them up as tools and posting them on the RIC website. Each tool is developed with the following elements: a) purpose; b) key items required; c) intended audiences; d) resources required; e) planning/workplan; f) evaluation; g) references; and h) contact information. One example is the KMb tool for an engaged scholarship event titled KM in the AM (RIC, 2018b) developed by the Knowledge Mobilization Unit at York University in Toronto, Canada. In addition to the sharing of experiences

that follows from different institutions utilizing these tools, efforts are underway to record members' experiences with RIC's KMb Tools to build collective understanding of why certain strategies work in particular contexts.

Webinars: All of RIC's KMb Tools are publicly accessible, but live webinars are presented for RIC members only. The recordings are later posted and made publicly available. These webinars are on diverse topics related to KMb and impact, and they provide a link to additional resources and tools. One example is the webinar "Supporting Research Impact in Grant Applications" (RIC, 2019) where KMb York presented the theory underpinning the tools developed at York University to support impact strategies in grant applications.

KMbuddy: The Knowledge Mobilization Buddy (KMbuddy) is a new initiative designed to fund a capacity-building program between two or more RIC members. Often this will involve a trip to establish a mentor–mentee relationship built around a specific need of the mentee and specific capacity or competence of the mentor. This program was rolled out in spring 2019, with KMbuddy activities occurring over the summer and fall of 2019.

Dr. RIC: Dr. RIC is a monthly membership engagement video call where members set the agenda each month. The agenda is distributed to the RIC network, and members interested in the agenda can dial in for one hour of membership exchange. It is the exchanges between members that build capacity. Often members struggle with similar issues but struggle in isolation on their own campuses. RIC and Dr. RIC provide a forum for "finding your tribe." For example, one RIC member asked to discuss internal grants and awards for KMb. The response from other members resulted in the creation of a document with six such examples, with links to guidelines and contact details for more information. Another discussion on open access resulted in a group of four librarians connecting on the role of libraries in KMb and a librarian from York University providing input into the work of librarians at the University of British Columbia.

Each initiative offers a different way of engaging with the RIC network, including more traditional transfers of information (webinars) as well as exchange-based interactions (KMb Tools, KMbuddy, Dr. RIC). While there are many anecdotes of individual RIC members benefitting from the expertise of another, anecdotes are not evidence. RIC's evaluation captures not only quantitative data on the reach and use of its initiatives but also narratives of how participation in RIC has created value for its members.

Methods

A case study evaluation (Russell, Greenhalgh, & Kushner, 2015) provided the overarching methodological approach of this study. The major advantage of a case study evaluation is accessing the "potential for communicating in ways that match how people learn, to promote the likelihood that they will engage with the findings" (Simons, 2015, p. xii). With RIC as the global-level unit of analysis, this methodology recognized that while the formal generalization of findings was not possible, lessons emerging from the ongoing evaluative efforts are likely to have informative value for the collective process of knowledge accumulation in the impact field.

Evaluation framework

A developmental approach (Patton, 2011) was adopted for this case study evaluation in order to support RIC's efforts to build institutional capacity for KMb in order to aid and accelerate impact. Developmental evaluation recognizes the collaborative, complex, and evolving nature of change processes (Preskill & Beer, 2012) and the important role participants can play in goal setting (Patton, 1994). The overall goal of the RIC evaluation is to inform and support continuous improvement, adaptation, and intentional change in the complex, dynamic environments of RIC as it pursues its vision. The goal of this study was to explore how RIC's activities to build capacity for KMb have contributed to the professional development of its internal membership.

A co-produced evaluation framework (see Appendix A; Bergen, 2019) was central to this work. The first element of the evaluation framework was a logic model linking the evaluation questions to RIC's audiences, enabling conditions, common activities, short- and long-term outcomes, and vision. It was important for the logic model to represent the diversity of RIC's member institutions, which are organized to respond to local and regional issues (McKean & Robbins, 2016). The second element of the framework was a measurement overview linking elements of the logic model to data collection and analysis methods that were a) flexible enough to have utility between member institutions and b) feasible given the resource constraints of RIC and its member institutions.

Data collection and analysis

Methods for data collection and analysis followed a convergent design (Creswell & Plano Clark, 2018), wherein quantitative and qualitative data were collected concurrently, analyzed separately, and then merged for comparison and integration (Li, Marquart, & Zercher, 2000). This approach supported the pragmatic orientation (Feilzer, 2009) of the evaluation that sought "to draw from the strengths and minimize the weaknesses" (Johnson & Onwuegbuzie, 2004, pp. 14–15) of quantitative and qualitative data when forming inferences about RIC's approach to building institutional capacity for KMb.

A survey was administered to all member institutions with internal RIC leaders able to respond ($N = 14$), which included members who held a position in the oversight of RIC's activities and the strategic planning of the network. Sixteen responses were received (two institutions had two respondents each). Respondents held a variety of institutional positions (e.g., manager of KMb, coordinator of strategic research initiatives), with approximately half situated in a research services office and the remainder positioned to support community-based research, large-scale research programs, and research centres or libraries. Two instruments were adapted for use in the survey: a) Hilary Edelstein's (2016) instrument[1] for studying collaborative research partnerships for KMb and b) Penny Cooper & Associates' (2017) instrument, developed for the evaluation of the Michael Smith Foundation for Health Research. Whereas the first instrument provided measures to explore factors affecting the development and success of collaborations structured around research use and impact, the second provided measures to explore the extent to which network activities were contributing to institutional KMb capacity. The organizing concepts of *usefulness* and

use described by Penny Cooper & Associates (2017) were focal points in this study. Usefulness referred to how RIC's activities were perceived in terms of their appropriateness, applicability, and practicality. Use referred to how RIC's activities have contributed to institutional KMb practices, including contributions to awareness, knowledge, skills, and positive attitudes about KMb. Prior to its distribution, the survey was piloted with several researchers with expertise in program evaluation and KMb.

Analysis of the quantitative data involved descriptive statistics and correlation analysis. Given the small sample size, statistical generalizations to a defined population were not made. Instead, the focus was on how concepts in the KMb and impact literatures helped in understanding and explaining observed findings (i.e., analytic generalizations; Onwuegbuzie & Collins, 2007). Analysis of the qualitative data followed a general inductive approach (Thomas, 2006) comprising four iterative steps: a) the thematic coding of text segments, b) synthesizing codes to form categories of consolidated meaning, c) recoding and recategorizing as more attuned perspectives on patterns in the data were developed, and d) synthesizing categories to identify underlying concepts within the data through a process of integration and refinement. Once each data set had been fully represented in meaningful ways, findings were merged to enable the identification of key features being converged upon. Respecting the developmental approach of the RIC evaluation, input and involvement of the RIC membership was critical at this stage in order to ascertain how emerging findings could be interpreted in the light of different institutional contexts, affirm current practices or inform new activities, and guide strategic questions regarding RIC's successes and challenges (Preskill & Beer, 2012). Moreover, interpreting findings in collaboration with RIC as the unit of analysis aimed to support the organization in "becoming more adaptable to the uncertain and unpredictable dynamics of complexity" (Patton, 2015, p. 6). Several feedback loops (summarized below) between the evaluation team and different RIC committees framed this process.

> April 2019: Emerging findings are shared with the RIC Governance Committee, resulting in refinements to how findings could speak to the RIC network at large.
>
> May 2019: Findings are shared with the RIC Evaluation Committee, with a major focus on the factors that might explain survey participants' qualitative and quantitative responses.
>
> July 2019: A second meeting is held with the RIC Evaluation Committee involving the final review, analysis, and clarification of findings; a discussion of the implications for the RIC network; and planning for how findings would inform later phases of the developmental evaluation.
>
> September 2019: Findings, implications, and future evaluation plans are shared with the full RIC membership at their annual in-person meeting, providing an opportunity to discuss the implications and to share feedback on next steps.

Findings

Findings are presented in relation to the research questions, with emphasis given to the results converged upon by the quantitative and qualitative analyses, and refined through the feedback loop process. Note that findings crystallized throughout the feedback loops are identified using a bracketed "FL." The findings begin with a look at the institutional and network contexts of RIC in order to characterize subsequent findings. Note that "members" is used throughout as a label for participants in order to convey their membership in the RIC network.

Institutional and network contexts for KMb

Institutional factors

Within member institutions, a variety of labels were used when members were asked to describe their institutional role. The most common roles were *KMb support for grant applications* (n = 10), *knowledge broker* (n = 9), *research communication* (n = 8), and *community/public engagement* (n = 7). Other roles, such *librarian and knowledge stewardship* (n = 1), were relatively uncommon and independently endorsed. On average, members identified with three roles. Phi product moment correlations indicated two statistically significant, strong associations between a) knowledge broker and community/public engagement (r = .778, p = .002) and b) KMb support for grant applications and research communication (r = .516, p = .039). In other words, it appeared that members viewed their institutional roles as multifaceted and thus not fully represented by one-dimensional labels.

Members were also asked to indicate the extent to which they possessed sufficient resources for their work with RIC. Reflecting the prevalence of KMb training among the sample—with all but three having completed formal training—most members agreed[2] they possessed the necessary skill set for KMb (n = 12) as well as the institutional support needed for engaging with the network membership (n = 10). In contrast, half (n = 8) of the membership felt ill-equipped when it came to tools for KMb, and only two members felt they had sufficient time for engaging with others in the network. Yet, that network activities on occasion conflicted with other scheduled commitments was not the sole time-related challenge; time was also a challenge in staffing constraints and turnover (e.g., changes in institutional leadership), as reflected in one member's desired future influence of RIC: "It has added an extra 1/3 FTE [full-time equivalent] load, at a time when my unit has lost 1 FTE … [so] I would hope for a dedicated FTE as KMb broker and RIC Liaison." Due to the incidence of staff mobility within member institutions, and thus the time required to rebuild institutional capacity for KMb, preserving institutional learning for KMb was an ongoing challenge.

Expanding on the importance of institutional learning, several associations between reported resources and the attributes of member institutions were examined. Spearman's rank-order correlation revealed that the duration of membership with RIC exhibited a statistically significant, strong positive correlation with both KMb skills (r_s = .637, p = .008) and KMb tools (r_s = .650, p = .006). That is, members' perceptions that they possessed sufficient KMb capacity were positively related to the length of time their institution had been involved with RIC. Conversely, membership

duration was not statistically significantly correlated with the institutional support or the time available for KMb work, suggesting these resources have been less amenable to change. A point to emphasize here is that KMb skills and KMb tools are resources within each member's control (i.e., not necessarily restricted by an institution), whereas institutional support and time are institutionally bound resources (FL).

Network factors

Factors characterizing RIC's work between member institutions were also examined (see Table 1), uncovering a division in network functions with higher and lower levels of endorsement. Specifically, it appeared the four functions with the highest level of endorsement corresponded to efforts to share leadership and generate engagement among the membership. Conversely, it appeared the remaining functions corresponded to efforts likely to differ according to each member institution. Providing some perspective on this finding, participants discussed how an expanding network of member institutions had precipitated an unexpected challenge: "A growing membership has reduced the one-on-one calls and interactions among members." This change in interactions was echoed by others, who identified that "growing the network [and] increased membership, particularly from U15s [15 of Canada's most research-intensive universities]" had been both a boon and a challenge for networked learning. Members further referenced how the increasing variance in member institutions' KMb needs had the effect that "it is not always easy to adapt the practices of other members." As such, as a network of diverse institutions, it had become increasingly important that the sharing of "what works" was accompanied by an exposition of *why* it worked in a particular context (FL).

Table 1: The degree to which RIC effectively performs various network functions

Network function	*M(SD)*
Engage all members in network activities	3.60(0.51)
Include members in decision-making processes to move the network forward	3.60(0.63)
Recognize the value of each member	3.46(0.52)
Minimize the barriers to being involved in the network	3.38(0.51)
Align its activities with the memberships' needs	3.15(0.69)
Work together to address the needs of its target audiences (e.g., researchers)	2.86(0.86)
Work to match the goals of the different institutions	2.54(0.93)

Note: Factors were scored on a 4-point scale, with 4 being the highest value. *M* and *SD* represent mean and standard deviation, respectively.

Additionally, when members described how the sharing of information about KMb was occurring, both instrumental (i.e., related to work tasks) and expressive (i.e., not related to work tasks) relations were described. Instrumental relations included advice seeking, collaboration, the exchange of best practices, the exchange of tools and resources, and the exchange of new ideas. Expressive relations included

social support and energy exchange (i.e., interactions that leave an individual feeling more positive, inspired, and motivated; Daly, Liou, & Brown, 2016). Given the importance members assigned to these different ways of interacting, capacity building for KMb appeared to be multi-relational activity.

Usefulness of a networked approach to building institutional capacity for KMb

As a proxy for the perceived value of specific KMb activities, members were asked to report on the usefulness of RIC's networked approach to building capacity for KMb as well as how its activities have contributed to their conceptual development around KMb (see Table 2). Usefulness was examined using four indicators, which together suggested that network activities were well received. Yet, while members were highly consistent (Cronbach's α = .909) in their responses, the relevancy of networked learning was a point of some disagreement. One member, for example, discussed an instance in which their specific, immediate KMb needs misaligned with the topical schedule of network activities, though stressed that "this difficulty should not reflect negatively on [RIC]. RIC seems to be serving those whose positions plant them firmly in the knowledge brokerage space quite well." Others, however, found those same activities to be highly relevant for their KMb work. These differences appeared to speak to the ebb and flow of relevancy in networked learning opportunities in light of member institutions with different KMb goals, audiences, and needs.

Indicators for members' conceptual development around KMb were observed to be predominately positive, suggesting growth in knowledge about KMb tools and resources as well as in understanding, attitudes, and confidence. For example, reflecting on the influence of network membership on day-to-day work, one member expressed how involvement "makes me more confident in my discussions about KMb with faculty and admin. I also have a better plan of action to improve KMb practice on campus." Notwithstanding similar evidence of growth, a divide between developments in KMb theory and practice was noted (FL), echoing other recent studies of KMb in research organizations (e.g., Powell, Davies, & Nutley, 2017, 2018). Specifically, while members extolled their "greater understanding of KMb in the university setting," they were less certain about improvements in their understanding of KMb theory.

Table 2: Descriptive statistics for members' perceptions about the usefulness of network activities

Measure and associated indicators	*M(SD)*
Perceived usefulness – The KMb topics I have been engaged in with Research Impact Canada:	
Met my expectations	4.31(0.48)
Were of high quality	4.23(0.60)
Resulted in learning that I was able to apply	4.00(0.76)
Were relevant to my current work	3.93(1.10)
Internal consistency	.909

Table 2 (continued)

Measure and associated indicators	*M(SD)*
Conceptual development – My participation in Research Impact Canada has led to specific improvements in:	
My awareness of available tools and resources related to KMb	4.36(0.50)
My understanding of KMb practices	4.36(0.63)
My attitude toward KMb	4.13(0.83)
My confidence in enacting KMb practices	4.00(0.95)
My understanding of KMb theory	3.67(0.82)
Internal consistency	.820

Note: All measures were scored on a 5-point scale, with 5 being the highest value. *M* and *SD* represent mean and standard deviation, respectively.

When asked to think ahead to future participation, members expressed several suggestions for how network activities could be made more useful, including exploring KMb topics in greater depth; creating opportunities for members to collaborate on specific KMb products and on network development (e.g., developing a collective statement on tenure and promotion that accounts for the importance of KMb); and developing processes that support members in importing and adapting KMb practices, ideas, tools, and resources found to be effective in other institutions (FL). The sentiment was that a focus on these suggestions would serve to further catalyze the use of KMb concepts in practice.

Use of KMb concepts in practice

The final dimension of the survey explored how RIC's members have used concepts from networked learning about KMb in practice. Given the challenges associated with studying how evidence is used (e.g., in the case of research evidence, see Gitomer & Crouse, 2019), findings presented in this section should be taken as indications of use rather than conclusive evidence.

The first measure of use included three brokering-specific indicators (see Table 3). Consistent with the finding that not all members identified with the role of knowledge broker, few (between $n = 1$ and $n = 5$) agreed with the indicators of this measure. Even so, members' responses about brokering-specific use were highly consistent (Cronbach's $\alpha = .959$) and found to be a strong positive correlation with formal membership duration ($r = .793$, $p = .002$) as well as a moderate positive correlation with perceptions of usefulness ($r = .642$, $p = .025$) and perceptions of conceptual development ($r = .688$, $p = .013$). The association with membership duration was expanded in the open-ended responses of four members who reported that it was "too soon to tell" whether networked learning about KMb will have influence on their brokering of connections between researchers and research stakeholders. As one member observed, though, participation in a respected and recognized KMb

network had "supported discussion with institutional leaders around the value of the KMb brokering role(s) within the university." What can be said about the brokering-specific use of KMb concepts is that it appears benefits from networked learning have accrued most notably in the long term and when activities have been perceived as useful (FL).

Table 3: Descriptive statistics for how network activities have contributed to members' KMb practice

Measure and associated indicators	*M(SD)*
Use – Brokering-specific – *My participation in Research Impact Canada has led to specific improvements in:*	
The quality of interactions I have brokered between researchers and research users	3.42(0.79)
The types of interactions I have brokered between researchers and research users (e.g., research development interactions, dissemination interactions) 3.08(0.79)	The frequency of interactions I have brokered between researchers and
research users	2.75(0.62)
Internal consistency	.959
Use – General – *Within the past 12 months, how well has Research Impact Canada*:	
Generated increased learning opportunities related to KMb	3.25(0.62)
Provided professional development opportunities	3.18(0.60)
Used information and materials provided by the membership for decision-making purposes	3.17(0.72)
Enhanced the importance of KMb practices	3.15(0.55)
Increased the body of knowledge you have for making informed decisions about KMb practices	3.15(0.69)
Enhanced the potential for greater impact from your work with target audiences (e.g., researchers and research users)	2.70(0.67)
Helped your institution bridge the gap between research, policy, and practice	2.38(0.92)
Internal consistency	.880

Note: General use measures were scored on a 4-point scale, with 4 being the highest value; brokering-specific use measures were scored on a 5-point scale, with 5 being the highest value. *M* and *SD* represent mean and standard deviation, respectively.

The second measure of use included seven general indicators (see Table 3). In contrast with brokering-specific use, members agreed with the content of five of these indicators, suggesting that networked learning has spurred some use of KMb concepts in practice. Responses to these indicators were highly consistent (Cronbach's $\alpha = .880$) and found to be moderately positively correlated with perceptions of conceptual development ($r = .596$, $p = .024$) and strongly positively correlated with perceptions of usefulness ($r = .788$, $p < .001$). Again, it appeared that

attention to the perceived usefulness of network activities was an important precondition for the extent to which KMb concepts were used in practice. Members' open-ended responses shed light on what some of these general uses have looked like:

> an improved ability to implement KMb into day-to-day work (e.g., "I am able to develop more theoretically sound KMb plans and integrate them into projects more thoroughly");
>
> the "sensitization of the [institutional leaders] and the direction of some departments to the importance of knowledge mobilization";
>
> the dissolution of feelings of isolation, replaced by enthusiasm for "being part of a national movement";
>
> an expansion of institutional perspectives on KMb through enabling "a look at the broader knowledge mobilization picture,"
>
> improved access to and awareness of useful KMb concepts (e.g., "I have been able to access insight, tools, and resources that have had a direct and positive impact on my work," and "[participation] has simply made me better at my work"); and
>
> bolstered authority as an ambassador for KMb, owing to the international image of RIC as an active and reputable KMb network.

On the other hand, many members once again emphasized that it was "too soon to tell" how networked learning will lead to specific uses of KMb concepts in practice. This finding was most evident for the items that asked whether participation has *enhanced the potential for greater impact from your work with target audiences* and whether participation has *helped your institution bridge the gap between research, policy, and practice*. Yet, considering the long-term nature of impact and of bridging specific divides between different research stakeholders (Boaz, Davies, Fraser, & Nutley, 2019; Nutley, Walter, & Davies, 2007), the protracted and non-linear nature of these types of use is to be expected.

As a final point of reflection, members were asked to think ahead to outcomes they were hoping to see from network participation in the years to come. Three main outcomes were described (FL): increased buy-in from institutional leadership in terms of dedicated resources (predominately time); improved and sustainable sharing of knowledge and resources among member institutions; and a strengthened profile of KMb among researchers and stakeholders, particularly researchers (e.g., "We would like to use our membership to create a campus network of KMb").

Discussion

Findings from this study provide initial empirical evidence of the benefits and challenges associated with a networked approach to building institutional capacity for KMb in a mission-driven impact system. Participants were clear in their views that participation in the RIC network of universities had contributed to their KMb practice. At the same time, considerable variability was observed regarding the extent to which networked learning was useful and what use looked like. Two overarching themes from this study can be understood in light of pertinent ideas from the KMb and impact literatures.

First, the contextual variability in how institutions engage in KMb work was accentuated through a networked approach to capacity building. For some time, the contextual dependence and variability of those working in KMb roles has been recognized (e.g., Cooper, 2014, Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004; Urquhart, Porter, & Grunfeld, 2011). The specific KMb goals and needs of institutions are necessarily dynamic to their local issues and constraints. Considering the identified roles of participants in this study as well as the correlations among those identifications, there was evidence that KMb needs aligned with two broad categories of methods for creating impacts (Bayley & Phipps, 2019a): a) dissemination or transfer methods (i.e., roles aligned with communication and grant-support aspects of KMb), and b) co-production or engaged methods (i.e., roles aligned with brokering and engagement aspects of KMb). The effect of this need diversity was that initiatives targeted at the whole network were at times askew with the specific KMb needs of individual institutions, as reflected in the relevancy of network learning, which exhibited the lowest mean and greatest variance of the indicators for usefulness. Moreover, although some members seemed aware of the diversity of KMb practices in other institutions (particularly those with more experience in the network), it was a challenge to understand how to collaborate effectively with other institutions or import practices in ways that attended to differences in context. This point speaks to the finding that increasing network diversity was both a boon and a challenge; greater diversity can mean greater access to ideas and resources as well as increased potential for innovation (Shearer, Lavis, Abelson, Walt, & Dion, 2018), yet harnessing that diversity requires a substantive time commitment and support across multiple levels (local, organizational, network).

An opportunity to address this challenge could be to explore how practice-based subgroups can support the diverse needs of different institutions concurrently with the broader vision of the network. Recent study of network concepts applied to KMb suggests that linked subgroups have the potential "to establish an environment more conducive to change" (Glegg, Jenkins, & Kothari, 2019, p. 22). By drawing on a framework for the diversity of KMb approaches—such as Huw Davies, Alison Powell, and Sandra Nutley's (2015) eight KMb archetypes (e.g., producing research-based knowledge products, brokering, and intermediation)—networked institutions are positioned to explore a) how subgroups focused on specific KMb approaches can accelerate capacity building and improve the relevancy of network activities, and b) how subgroup learning can expand the pooled KMb capacity of the whole network. Relatedly, it would be important to explore the network systems and structures required to facilitate flows of KMb-related information and resources within *and between* practice-based subgroups.

Second, benefits that accrue from networked learning at the institutional level need to be attuned to how that capacity is distributed among individuals and groups within institutions. Summarizing the work of a number of organizational and network learning scholars, Omar Belkhodja, Nabil Amara, Réjean Landry, and Mathieu Ouimet (2007) observe that

> the transition from individuals to the organization seems … to stem from two main elements: first, the incorporation of knowledge into

> organizational memory, structures, and routines; and second, the usefulness of the knowledge as perceived by the individuals who make up the different organizational units. (p. 389)

Similarly, emerging work that blends KMb, complexity, and network concepts (e.g., Beckett et al., 2018; Kitson, Brook, Harvey, Jordan, Marshall, O'Shea, & Wilson, 2018) calls to question how capacity building across multiple levels of research systems can be mutually reinforcing. In the case presented here, a challenge was to ensure that networked learning was preserved and iterated upon in order to contribute to institutions' long-term KMb goals. For example, time constraints critically impacted participants' ability to understand, import, and adapt KMb tools from other institutions. Building institutional capacity for KMb through a networked approach required being self-referential to the ways knowledge is sourced, validated, shared, interpreted, and employed. In this way, RIC is mobilizing knowledge about KMb. It stands to reason that a topic deserving further exploration is how building institutional capacity is reinforced by paying attention to the capacity of individuals and groups within institutions. In relation to the skills (i.e., impact competencies; Bayley, Phipps, Batac, & Stevens, 2018; Bayley & Phipps, 2019b; Mallidou, Atherton, Chan, Frisch, Glegg, & Scarrow, 2018) and knowledge (i.e., impact literacy; Bayley & Phipps, 2019a, 2019b) needed to support impact, future studies could explore how individual and institutional impact competencies and literacies can work synergistically to support impact pathways.

Limitations

A perennial threat to valid interpretations in self-report data is social desirability (Gitomer & Crouse, 2019). It is possible that participants in this study responded in a way they thought would be viewed positively by others. Thus, similar to other self-report studies of KMb within research institutions (e.g., Zuiker, Piepgrass, Tefera, Anderson, Winn, & Fischman, 2019), these findings cannot be viewed as complete or accurate portrayals of changes to institutional capacity for KMb. However, despite its limitations, self-report data about KMb practices does offer a functional starting point for the more in-depth analysis of specific actions (Cooper & Levin, 2010).

Another limitation is that, in the case of simple quantitative measures, a clear line between the organizing concepts of usefulness and use is blurred. For this reason, the measures and indicators of either concept do not necessarily constitute an objective instrument; rather, in combination with the qualitative data, quantitative findings are taken as indicative of patterns in the data to be examined in greater depth in subsequent study.

Finally, it is important to reiterate that findings from this study are not generalizable, given the case study evaluation design. At the same time, however, insights from this study are informative when viewed against the wider KMb and impact literatures and provide a useful basis for future research. For instance, the opportunity for practice-based subgroups has already entered a pilot phase and generated progress within the RIC network.

Conclusion

This study provides some of the first empirical evidence about a sustained networked

approach to building institutional capacity for KMb. While examples abound of networks that seek to build capacity to support impact in a specific discipline, the case examined here provides a first look at the potential benefits and challenges of networked learning across universities in a mission-driven research system. Future research will build on this study by examining in greater detail how network efficiency can be enhanced and how institutional learning can be preserved.

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Notes

1. Edelstein's survey iterates on two well-established instruments from the health-promotion field: a) the self-assessment survey of the Center for the Advancement of Collaborative Strategies in Health (2002), and b) the Community Impacts of Research Oriented Partnerships measure (King et al., 2003).
2. "Agreed" throughout corresponds to the Likert-item responses agreed and strongly agreed?

Websites

Advancing Research in Society, https://www.researchinsociety.org/
AUTM, https://autm.net/
Knowledge Commercialization Australia, https://techtransfer.org.au/
Michael Smith Foundation for Health Research, https://www.msfhr.org/
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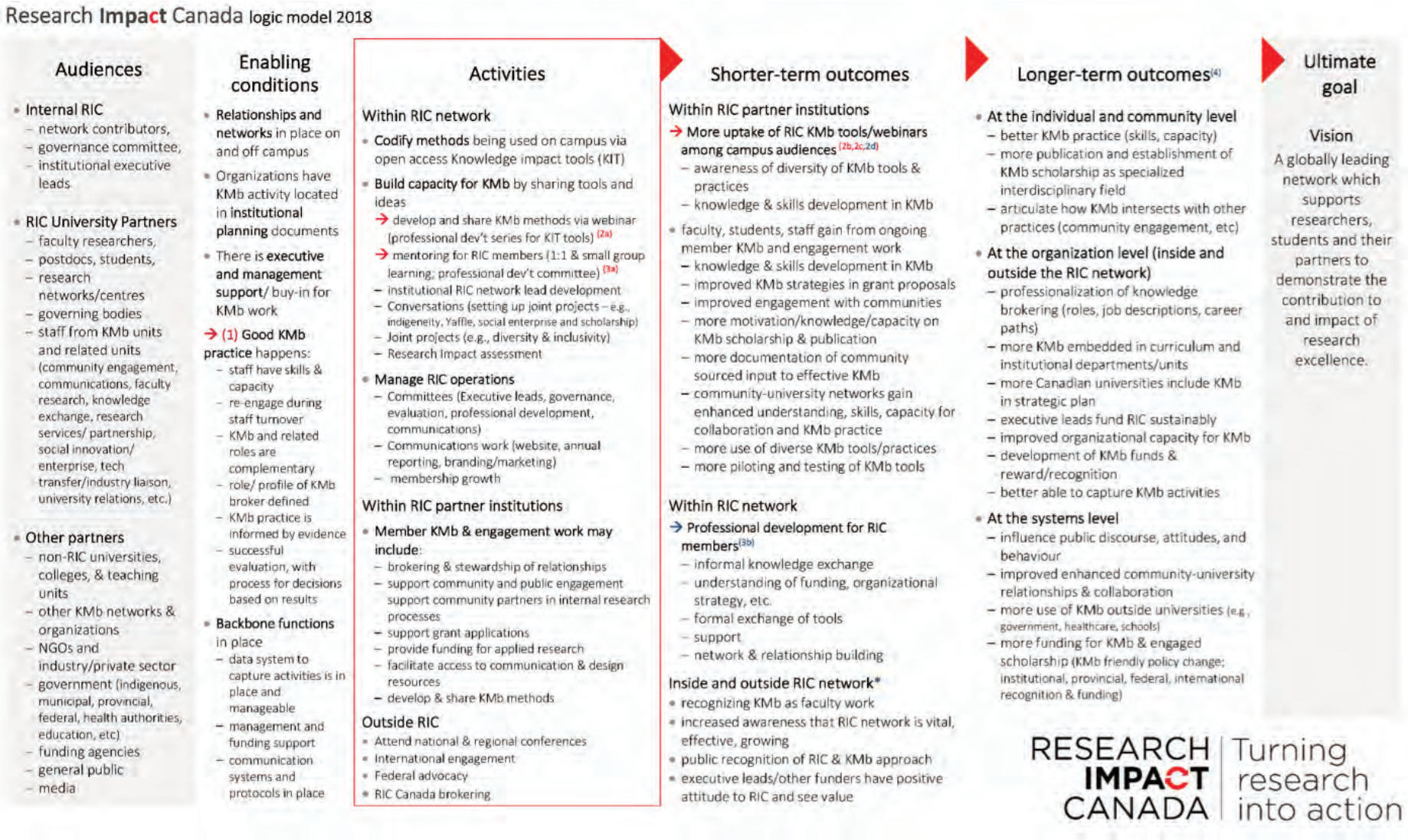
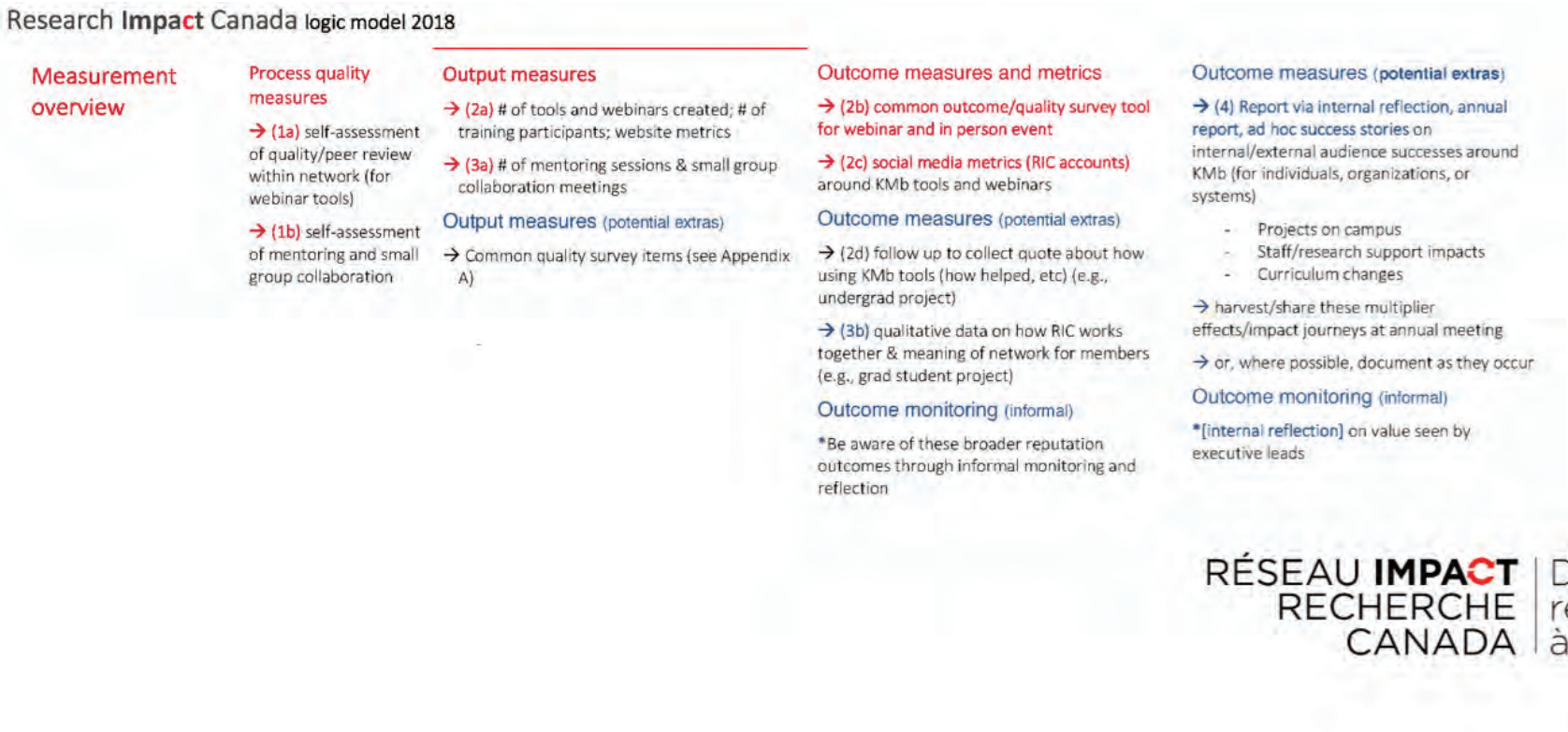
Appendix A

Co-Produced Evaluation Framework of Research Impact Canada



Appendix A (cont.)



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Knowledge Mobilization for Impact: A Multi-Case Study of Education Organizations

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Abstract

Using a multi-case design, this study draws on empirical evidence and literature to analyze the knowledge mobilization approaches in educational organizations. The sample consists of four different types of education organizations in Ontario, Canada: a school board, a university, a not-for-profit, and a professional association. Data sources include publicly available websites and documents (n = 63) and key informant interviews (n = 18). Although research impact was operationalized and observed differently in these organizations, measures of impact were found to be ineffectual in all cases. This article validates the findings of existing studies that have found that there are limited instrumental uses of research, wherein research directly influences policy and practice decisions. The study calls for a careful discernment and applicability of research impact.

Keywords Research use; Research impact; Knowledge mobilization; Education policy

Introduction

In recent decades, there has been an international trend among governments and research funders to mobilize research knowledge and understand the impact of these efforts. In the Canadian context, the term *knowledge mobilization* has become a common part of the discourse for researchers and policymakers. Knowledge mobilization

Sofya Malik. (2020). Knowledge Mobilization for Impact: A Multi-Case Study of Education Organizations. *International Journal of Education Policy & Leadership 16*(7). URL: http://journals.sfu.ca/ijepl/index.php/ijepl/article/view/945 doi: 10.22230/ijepl.2020v16n7a945

(KMb), the process of connecting research to policy and practice, concerns individual- and organization-level efforts to increase the use of research findings by education stakeholders such as policymakers, practitioners, and the public.

Universities, governments, funding agencies, and education organizations mobilize research knowledge with the intent of informing policy and practice. Education is among the key public service areas, garnering "high levels of government resource and political attention" (Nutley, Walter, & Davies, 2007, p. 4). Since the mid-1990s, federal research funding agencies in Canada have been instigating a more widespread investment in KMb practice (Social Sciences and Humanities Research Council of Canada, 2009). Since the 2000s, more attention has been placed on research quality and research synthesis within KMb in the education sector (Campbell & Levin, 2009; Nutley et al., 2007).

Resources are allocated toward research and innovation to enhance and improve the quality of education every year. However, research and evaluation projects are being conducted with little influence on policy or practice decisions and actions. While education organizations (e.g., government, universities, nonprofit organizations, and professional associations) continue to flow resources into collecting data to determine school improvement and educational outcomes, little is known about how research outcomes are mobilized within organizations and the impact of these efforts in the educational landscape.

This study explored the following research questions: How are four education organizations in Ontario engaging in different approaches to KMb? What evidence do the education organizations collect on the impact of their KMb strategies? What challenges do these organizations encounter in mobilizing knowledge and how do they address these challenges?

Literature review

Ontario is one of the jurisdictions in Canada where KMb has been particularly important in reforming educational provision. Within Ontario, the Ministry of Education, university faculties of education, school boards, and community organizations have engaged in active, intentional efforts toward mobilizing research-based knowledge (Cooper, Levin, & Campbell, 2009; Qi & Levin, 2013).

Organizational factors make a difference to how organizations engage in KMb. Different kinds of organizations vary in their structural, bureaucratic, governance, and staffing models, to name just a few factors. This article discusses some factors and processes relevant to understanding research use in government organizations, universities, school boards and schools, think tanks, and nonprofit organizations.

Government organizations

In the past decade, government organizations have become increasingly interested in research use to influence policy and practice (Cooper et al., 2009; Levin, 2012; Morton, 2015). The widespread interest in research use has generated a stronger interest in KMb as a means for strengthening evidence-based practice. However, while bureaucratic processes are necessary to government systems, they may also limit government engagement with research. In a pan-Canadian study of research use in

government, Creso Sá and Daniel Hamlin (2015) investigated provincial ministries overseeing education, higher education, and science and technology and found that the capacity to generate, access, and use research was limited. Yet, despite the limited use of research, they reported significant efforts to build capacity to share and use evidence among government staff and researchers. The study also identified the Ontario Ministry of Education as one of the most proactive organizations in research use within Canada (Sá & Hamlin, 2015).

Despite a high level of interest in KMb, Carol Campbell and David Fulford (2009) identified knowledge integration as the most important processes at the government level; they noted, however, that there is little research on how governments use research, with evidence that senior policymakers pay little attention to research in the decision-making process. A cross-sector review by Jane Hemsley-Brown (2004) found that knowledge use in the public sector faces resistance not at an individual level but at the institutional level, which does not foster a culture of learning. Organizational culture was found to be a key aspect of facilitating research use (Hemsley-Brown, 2004). Altogether, a review of current studies, with a focus on the Canadian context, revealed a high level of interest in research use across government organizations. Yet, the capacity to share, understand, and actively use research was limited.

Universities

As the single largest producers of research evidence, universities (Cooper, Levin, & Campbell, 2009; Read, Cooper, Edelstein, Sohn, & Levin, 2013) are central to KMb processes (Qi & Levin, 2013; Sá, Li & Faubert, 2011). Universities tend to emphasize, to varying degrees, the conceptual, symbolic, and instrumental uses of research with decision-makers using research in indirect ways rather than in instrumental and direct ways (Amara, Ouimet, & Landry, 2004).

In general, universities have weak KMb practice at the institutional level (Levin, 2012). Universities predominantly engage in evidence production rather than the dissemination and communication of findings. Sá et al. (2011) found that universities focus on the development of research-based products, particularly on websites, as a means for disseminating research. Their research shows that websites are not being used strategically to facilitate a broader dissemination of research work. Because the nature of research uptake is complex, in order to reach user audiences, efforts need to extend beyond simply posting information on a website. Often, target audiences may not be aware that the website exists, they may not access the website, and if the website is accessed, mediation activities are needed in order to understand and apply the use of research findings. With concentrated and sustained efforts to influence policy and practice, research programs based out of universities have strong potential for KMb impact (Read et al., 2013). Yet, despite this potential, the processes taken to facilitate research use and uptake are limited (Sá, et al., 2011).

Schools and school districts

School boards predominantly engage in research related to school-based data and student achievement. In times of diminishing resources, educators face increasing pressures to "use data to inform their practices specifically and improve the organi-

zation more generally" (Farrell, 2015, pp. 439–444; see also, Brown, Schildkamp, & Hubers, 2017). Capacity-building efforts tend to centre on supporting school administrators in understanding and using data for decision-making at the local school level. Attempts to implement evidence-based reforms are often highly vulnerable to traditional hierarchical, highly political practices (Datnow, 2000) and top-down approaches (Brown, Schildkamp, & Hubers, 2017).

In general, schools and school districts have a particularly weak capacity to find, use, share, and apply research to practice (Coburn, Honig, & Stein, 2006; Sheppard, Galway, Wiens, & Brown, 2013). Findings from studies on school districts' uses of research suggest that practices need to strongly align with the district purpose and its vision for using the data to improve student outcomes (Honig & Coburn, 2008; Wohlstetter, Datnow, & Park, 2008). A study specific to the Toronto District School Board illustrated the importance of collaboration as a means to improve teacher work by "mobilizing knowledge champions to assist teachers in real-time, in their classrooms to improve their teaching" (Edge, 2005, p. 50) and ultimately result in better student achievement. Altogether, efforts to engage teachers in research use continue to pose ongoing challenges, as KMb is often a lower priority endeavour amid administrative and curricular tasks.

Think tanks and nonprofit organizations

Organizations with a specific KMb focus such as think tanks tend to have stronger connections between their research, communication, and the application of findings (Sin, 2008). In order to address the gap between research and practice, a number of third-party or nonprofit organizations and think tanks have emerged (Cooper et al., 2009). These kinds of organizations share similar purposes to facilitate evidence-based decision-making and knowledge exchange. However, funding for such think tanks can be tenuous, as federal government funding can be discontinued.

Key issues and tensions

The major debates in this field pertain to what counts as evidence, quality criteria for evidence, what evidence to mobilize and to whom, how to measure impact, and understanding effective practices for mobilizing research knowledge with intended audiences (Bennet & Bennet, 2007; Boaz, Grayson, Levitt, & Solesbury, 2008; Landry, Amara, & Lamari, 2001; Landry, Lamari, & Amara, 2003). What counts as evidence for one individual or organization may differ for another. Vivian Tseng (2012) argues that educators have differing notions about what "counts" as evidence, largely because of their perceptions about the relevance of research to their daily work and who is producing the research. Even within the same organization, there may be differing perceptions between individuals about what counts as evidence.

In addition to determining what counts as evidence, there are no established criteria for the quality of evidence. The perceived quality of research is a "key factor in shaping whether or not potential users say it will be used" (Nutley et al., 2007, p. 68), shaping the extent to which policymakers and practitioners use the findings. In many cases, social and political factors may drive decisions about what knowledge to mobilize and to whom. Louise Shaxson, Alex Bielak, Ibrahim Ahmed, Derek Brien,

Bernadette Conant, Catherine Fisher, Elin Gwyn, Laurens Klerkx, Anne Middleton, Sarah Morton, Laxmi Pant, and David Phipps (2012) agree that "[c]hoosing what knowledge needs sharing, with whom, and for what purpose, is a value-laden process, particularly where issues are heavily politicized and characterized by conflict and competition" (p. 16). In this context, social and political tensions play a role in influencing organizational approaches to KMb.

Understanding impact

Impact is the most problematic aspect of studying KMb. Many scholars acknowledge the shortcomings of impact and the highly complex and intangible nature of tracing research use. Carol Weiss' (1979) theory of research use, broken into instrumental use, conceptual use, and symbolic use, is essential to understanding impact. Scholars have since adapted these concepts to apply to KMb. Understanding research use in its various forms can inform how impact is measured. Huw Davies and Sandra Nutley (2008) define impact as "how and where research-based knowledge gets used by policymakers and practitioners and the consequences (i.e., impacts) of that use" (p. 3). Challenges, however, persist in tracing the indirect routes of research use.

The context for research use is essential to facilitating research uptake. Nutley et al. (2007) argue that a separate set of factors affect policy and practice environments. In the policy context, they found that research was more likely to be used when: 1) the research aligns individual interests and organizational goals, 2) the findings coincide with existing ideology in the policy environment, 3) researchers and policymakers are brought together, and 4) organizational culture exists at a local level that broadly supports research use. In the context of practice, Nutley et al., (2007) found factors that hindered the use of research in organizations: 1) lack of time to read research, 2) limited ability to act upon research findings, 3) lack of resources to support change of practice, and 4) cultural resistance at the local level to research use. Contextual factors must be taken into consideration when determining appropriate KMb approaches and activities.

All in all, the challenges to studying research impact are characterized by the prominent tensions around defining impact, distinguishing between research use and impact, and designing metrics to assess impact. Scholars acknowledge the challenges of measuring impact and recognize the limitations of seeing the immediate impact of research use.

Conceptual framework

The framework of this study draws from the major recurring concepts, terms, definitions, models, and theories from the KMb field to investigate the phenomena of KMb in organizations. The conceptual framework for this study (Malik, 2016), outlined in Figure 1, builds on John Lavis, Dave Robertson, Jennifer M. Woodside, Christopher B. McLeod, and Julia Abelson's (2003) knowledge transfer strategy. Five questions guide the conceptual framework for understanding KMb in Ontario education organizations: Why are the organizations engaging in KMb? (Purpose); What knowledge are they producing? (Evidence production); Who are the organizations seeking to engage through their KMb efforts? (Target audiences); How are organiza-

tions engaging in KMb? (Products, events, networks, and capacity building [PEN-C] and mediation strategies); What are the implications of these efforts? (Impact and challenges). The KMb approaches to these dimensions vary according to contextual factors, such as the organizational mission, context, and capacity, and the social and political context.

Figure 1. Conceptual framework of education organizations engaging in KMb in Ontario

Source: Malik, 2016

Why are the organizations engaging in KMb? (Purpose)

Purpose influences how KMb functions in organizations. The organizational purpose can include sharing knowledge among individuals, co-producing knowledge, drawing knowledge into an organization, and disseminating knowledge (Shaxson et al., 2012). By understanding the purpose for doing KMb work, insights may be gained into what evidence is being mobilized and to whom.

What are they mobilizing? (Evidence production)

Organizations engage in evidence production as part of the KMb process. Evidence production is the conduct and provision of research, evaluation, and data analysis (Campbell & Fulford, 2009). Knowledge generation, as Campbell and Fulford (2009) put it, is the pursuit of new knowledge and can be a primary aim of conducting research.

Who are the organizations seeking to engage through their KMb efforts? (Target audiences)

Target audiences are the end users that organizations aim to engage through their KMb approaches and activities. The research literature indicates that target audiences need to be clearly identified with a specific strategy that considers an organization's contextual factors (Lavis et al., 2003). To be effective, KMb strategies must take the interests and needs of different kinds of target audiences into consideration (Lavis et al., 2003). Considering the needs of user audiences when it comes to dissemination strategies is essential to research uptake.

How are organizations engaging in KMb? (Products, events, networks, and mediation strategies)

Based on reviews of the literature, products, events, networks, and capacity building are the main overall ways of categorizing KMb strategies (Cooper, 2012; Qi & Levin, 2013; Sá et al., 2012). These strategies, used in combination, may facilitate the exchange of evidence within an organization, with partners external to the organization, and with intended user communities. In recognition of the multiple processes and routes of KMb functions, organizations may use these strategies to varying degrees. Mediation activities occur through multiple means, such as the creation, translation, sharing, and understanding of research-based evidence.

What are the implications of these efforts? (Impact and challenges)

As KMb happens in instrumental, conceptual, and symbolic ways, there are also multiple ways of measuring impact. The most predominant forms of evaluation measure the instrumental uses of research (Nutley et al., 2007). The oft-contested aspects of what research to mobilize, to whom, and for what impact are riddled with tensions in the KMb field. A general lack of understanding about impact measurement augments these tensions.

The KMb approaches of these dimensions vary according to contextual factors, such as the organizational mission, context, and capacity, and the social and political context.

Each component of the conceptual framework is discussed in detail in the following subsections.

The social and political context

The outer circle of the conceptual framework consists of factors affecting KMb approaches. The social and political context affects research use differently in different kinds of organizations. The social and political context can also influence the organizational mission, culture, and capacity. Organizational responses to external pressures can affect how organizations approach KMb (Shaxson et al., 2012). The social and political context plays an influential role in the research, policy, and practice domains, affecting the organizational mission, capacity, and culture for KMb.

Organizational mission

Understanding the organization's mission is necessary as part of gaining insight into the overall mandate that can "guide the strategic plan of the entire organization" (McDonald, 2007, p. 257). The organizational mission may affect the extent to which an organization engages in evidence production and how much an organization values research use.

Organizational capacity

Organizational capacity is about the resources, internal processes, and ability of an organization to meet its goals. Because strategic KMb efforts tend to be perceived as lower priority pursuits (Cooper et al., 2009), fewer resources are allocated to support these efforts. Within organizations, the flow of information occurs in many different facets

and forms, requiring active, deliberate communication efforts to reach target audiences (Contandriopoulos, Lemire, Denis, & Tremblay, 2010; Knott & Wildavsky, 1980).

Organizational culture

Organizational culture refers to the "behavioral norms, assumptions, and beliefs of an organization" (Owens & Valesky, 2011, p. 142). Norms and assumptions are essential to defining organizational culture. Cultural norms and assumptions are often the implicit, unstated ways that individuals approach problems and strategies in organizations. The culture of an organization can influence whether research is used to support decision-making and practice, and to what extent.

Using the conceptual framework as a guide, this study considered how different kinds of organizations approach KMb and the research impact.

Methodology

To understand the phenomena of research impact, a case study approach provided insight into the complex ways organizations understand and evaluate KMb efforts. The objective of the case study is to "collect data about actual human events and behavior or to capture the distinctive perspectives of the participants in your case study (or both)" (Yin, 2014, p. 102). The case study approach offers a "wider view of the channels through which research can flow" (Nutley et al., 2007, p. 66). Using a multiple-case design of four "cases," or education organizations, this study used document review (n = 63) and key informant interviews (n = 18).

Document review

The Ontario Education Research Panel commissioned the researcher to conduct a scan of existing KMb initiatives across the province in education.

The scan began with a keyword internet search strategy to create a preliminary list of networks, organizations, and organizational KMb efforts that focus on a particular area of knowledge, policy, and practice within kindergarten to Grade 12 (K–12) education in the province. Public records include administrative documents (e.g., KMb strategies, proposals, progress reports, etc.), government policy documents, formal evaluations, and news media articles (Olsun, 2010). The researcher reviewed organization websites for PEN-C strategies: products, events, networks (Cooper, 2012) and capacity-building activities (Malik, 2013). The product strategies included reports, executive summaries, literature reviews, systematic reviews, reference lists, policy briefs, fact sheets, success stories, multimedia, and toolkits (Cooper, 2012). Event activities reviewed included conferences, seminars, academic workshops, symposia, and exhibitions, when the aim of these activities was to disseminate research to practitioners and users (Cooper, 2012). Network strategies included a review of glossaries, frequently asked questions (FAQs), online tutorials, and research support services (Cooper, 2012). Capacity-building strategies refer to organizational efforts to develop KMb skills, practice, and understanding for individuals and groups (Malik, 2013). As part of this study's document review process, any data voluntarily provided by key informants was included. KMb efforts were coded according to these categories, including data available on the websites with key informant responses.

Altogether, the scan report summarized Ontario programs and initiatives demonstrating KMb systems approaches in publicly funded and nonprofit education networks, institutions, and organizations. The scan report found that while a range of education organizations in Ontario are engaging in KMb, these efforts are sparse and largely uncoordinated. The initial scan served as a basis for the selection of the organizations in this study.

Sampling

The scan led to the identification of 60 education organizations involved in K–12-focused KMb efforts at the system-level in the province of Ontario. From the scan, six different types of education organizations were identified: 1) the Ministry of Education, 2) university faculties of education, 3) school boards, 4) professional organizations, 5) nonprofit and other organizations, and 6) organizational partnerships. One reputational case was selected based on the PEN-C framework for each type of organization: university faculty of education, school board, professional, and nonprofit. Because of time constraints and the scope of this study, two categories were excluded from the case sample. The ministry was omitted because it is a large, complex organization that comprises several divisions and branches with potentially complicated ethical and accessibility issues. Organizational partnerships were also omitted because they are not actual "organizations," and because of the complex nature of partnership agreements.

From the scan report, the following four reputational organizations were identified from the four types of education organizations based on the PEN-C framework: the Ontario College of Teachers (OCT), People for Education (P4E), the Toronto District School Board (TDSB), and York University (York U). The OCT is a regulatory professional organization and all publicly practicing teachers across the province are members. P4E is a small nonprofit organization with noteworthy KMb efforts focused on parent engagement and advocacy in education. The TDSB, the largest school board in Canada, served as an example of KMb efforts in a large education organization located in one of the most populous and diverse urban settings in the province. York U is an example of an organization with active KMb efforts, including involvement with a provincial research partnership (i.e., Knowledge Network for Applied Education Research).

Key informant interviews

Key informants were identified based on their role within the organizations (e.g., directors, senior administrators) or with KMb efforts (e.g., researchers, program coordinators). Key informants also included former staff members of the organization who have been involved in KMb efforts. Sampling was purposeful, reputational, and based on initial data gathered about the organization through the documentation process. Snowball sampling occurred; within each organization one interviewee recommended another colleague as appropriate to the research study. Altogether, the informants include chief executive officers, directors, coordinators, researchers, and department managers. The interviews were conducted in person at the organizations or by telephone, depending on participant preferences. The interviewees are referred to with the short abbreviated of the organization, followed by Informant #1, #2, #3, #4, or #5.

The conceptual framework was used to guide the coding of the interview data. Themes were prioritized according to their relevance and importance to the study's focus and research questions. Relationships between themes, within and across organizational cases, were developed based on the conceptual framework of interview data collected. Data were coded manually using the following main steps from the Carl Auerbach and Louise Silverstein (2003) framework:

- pre-code,
- code based on research questions and pull out participant responses,
- code based on the conceptual framework,
- note emergent themes, and
- pull out relevant quotes.

In the pre-coding process, manuscripts were reviewed using the conceptual framework to identify themes. Using and seeking only "relevant data" that aligned with the conceptual framework, key quotations were highlighted. As Auerbach and Silverstein (2003) elaborate, the coding procedure is a way of "organizing the text of the transcripts, and discovering patterns within that organizational structure" (p. 31). Coding was conducted in stages, beginning with what is relevant to the research questions, coding based on the conceptual framework, and noting the pervasiveness and repetition of ideas (Auerbach & Silverstein, 2003). In order to conduct a more detailed analysis after the initial coding, the researcher used analytic memos to document and reflect on coding choices and processes (Saldaña, 2015). As part of the additional coding process, any discrepancies, contradictions, and gaps were identified between the document and interview data.

Validation strategies

This study draws from validation strategies to enhance the credibility and rigorousness of this research (Creswell & Miller, 2000). The data was triangulated with the various forms of data that were collected in this study (i.e., interviews and online documents). The researcher applied Robert Stake's (1995) "critique checklist" (p. 131) to assess the quality of the cases in the report, and Stake's (2006) *Multiple Case Study Analysis* guided the analysis and writing of the study. One individual case would not provide a sufficient picture into Ontario's KMb landscape. By looking at multiple sites, the study investigated how different kinds of organizations approach KMb. The researcher discerned the particularities of individual cases along with the generalities of cases as a whole (Stake, 2006). Furthermore, member-checking was conducted to verify data and interpretations with participants in order to check the accuracy and plausibility of the results (Lincoln & Guba, 1985; Merriam, 1998). Member-checking was performed first with the interview transcripts and then with a draft manuscript for participants to correct, modify, or provide feedback on.

Findings

This study analyzed responses to three key questions, which are summarized and presented below.

How are four education organizations in Ontario engaging in different approaches to KMb?

The findings suggest that the four educational organizations—while varying in composition and structure—value KMb, have clearly defined purposes for this work, are actively engaged in KMb efforts, and are using multiple strategies to reach target audiences. However, the findings indicate greater attention must be paid to understanding the specific needs of target audiences to ensure a more widespread use of evidence. When it comes to KMb strategies, there is evidence of a range of activities taking place, from social media to research products. Building the capacity to trust and understand research findings encourages use. From an organizational standpoint, this study finds two factors that contribute to evidence use: 1) the reporting structure and value of a research services department in the organization, and 2) staff dedicated to KMb work full-time, or with designated KMb functions as part of their role.

Sharing, exchanging, and transferring knowledge can have an impact on practice

A common theme among organizations was a belief that the ability to share, exchange, and transfer evidence-based knowledge has a transformational influence on practice. The intention behind the work, according to OCT Informant #1, is "to get research into the hands of practitioners, but in ways that is accessible to them, that are not intimidating and that can advance student learning and transform their practice." The TDSB demonstrates its belief in transformative practice by focusing efforts on building capacity among principals to share, understand, and use school-based data. By concentrating its efforts on service delivery, York U's KMb Unit believes that practice among academics can be transformed. Through its research, York U's Faculty of Education is more strongly linked with generating new research to support the teaching profession. P4E demonstrated dedicated efforts to influence policy and decision-making related to current issues in public education. In different ways, these four organizations are producing knowledge with the intent of directly and indirectly influencing policymakers, decision-makers, parents, and practitioners.

Key organizational informants believe the co-creation of knowledge is a priority and intend to co-construct policies that represent multiple perspectives

There is evidence of collaborative KMb models being used as a way of engaging multi-level stakeholders. York U, for example, arrived at a collaborative model via an iterative process that moved from producer push to co-creation. The OCT invites participation in policy development from a range of stakeholders, including students, parents, and community groups. Stakeholders can participate through social media, taking the resources developed collaboratively and applying them to their own contexts to support KMb. The OCT's ability to communicate with all teachers is powerful. At times, the OCT sends call-outs or invitations to members through its *Professionally Speaking* magazine. Such call-outs ask teachers to participate in provincial policy development and support the ongoing revision of the professional learning framework. The OCT Informant #2 observed that they may receive hundreds of interested participants within a week of the magazine issuing the call-out.

Altogether, when it comes to KMb approaches, organizations are using PEN-C strategies to mobilize knowledge within and outside of their organizations. There was an over-reliance on traditional forms of sharing evidence-based products, primarily through organizational websites. Other traditional forms of dissemination include publishing in academic journals—particularly ones with limited access. A York U informant criticized the widespread misconceptions about dissemination vehicles, noting that universities are guilty of retaining their use of traditional modes of dissemination.

Table 1 summarizes the cases' key approaches and activities based on the conceptual framework for the study (Malik, 2016).

Table 1: KMb approaches and activities in the cases

KMb approaches & activities	OCT	P4E	TDSB	York U
Purpose	The regulation of the teaching profession	Communication, dissemination, and advocacy in public education	Improving student achievement	Knowledge production, knowledge brokering, and service delivery
Evidence production	Focus groups and surveys about the teaching profession	Surveys, Measuring What Matters project	Student and parent census, extensive school and community database, data dashboard	Scholarly by faculty, KMb Unit focused on knowledge brokering
Target audience	Public, members, and other regulatory bodies	Parents, policymakers, and the public	Administrators, senior leadership, teachers, students, parents, and the public	Faculty, graduate students, staff, community, and government and public
PEN-C	Professional magazine and reports, member events, work with cross-sectoral regulators, courses and workshops	Annual report, research reports, parental FAQs, conferences, parent councils, workshops, and parent support line	Research reports, fact sheets, literature reviews, conferences, workshops	Plain-language summaries, KMb workshops, KMb certificate pilot program, conferences
Mediation	Regulatory sector collaboration, public awareness initiative, inter-organizational collaboration	Relationship with Parent Involvement Councils (PICs), media, cross-sectoral partners	Partnerships with external agencies and applied researchers, capacity building among school administrators	Knowledge brokering model within university, communities, and other institutions
Impact	No short-term or long-term measures specific to KMb	Limited impact measurement activities specific to KMb	Limited impact measurement activities specific to KMb	Some impact measurement activities specific to KMb
Challenges	Moving beyond "dissemination as use" traditional forms of dissemination	Funding and resources to support innovative approaches	Media and public scrutiny leading to reactive rather than proactive approaches	Widening reach of KMb tools and strategies, improving impact measurement

Apart from the mission statements, there are obvious differences between the organizations in terms of size, role, governance models, culture, and capacity for KMb.

What evidence do the education organizations collect on the impact of their KMb strategies?

This study found measures of KMb activities to occur predominantly around measuring outputs and tracking website visits using tools such as Google Analytics. Measures of impact occur by measuring outputs. Organizations in the sample primarily track outputs through patterns and visits to their website. Informants recognized the importance of measuring KMb impact as a means to inform program improvements and target the needs of user audiences. An important distinction was noted by York Informant #1, where measures of impact may be confused with measures of "activity." The York U KMb Unit tracks and reports on their KMb activities. Measures of impact in KMb may be traced through narrative case studies, a method discovered by research into the Research Evaluation Framework in the UK.

KMb happens through multiple channels and processes. Because of the indirect nature of KMb, processes, stories, and case examples demonstrate some ways of measuring impact. The York U case highlights the use of stories as an important means of understanding impact over a period of three to five years. By staying in contact with research partners, the KMb Unit at York U strives to learn lessons from KMb in practice. P4E acknowledged that impact measurement is an area that the organization needs to work on in order to better track outcomes and inform its KMb strategies. The TDSB informants cited ongoing tracking, monitoring, and measuring activities. However, it was not clear whether and to what extent these actions were specific to measuring the impact of KMb. Similarly, the OCT has the least amount of KMb-specific strategies among the organizations, with measurement functions being primarily about the teaching profession itself, rather than tracking and monitoring KMb strategies. Formal and informal processes are in place to gather evidence on approaches related to its professional magazine and also the teaching profession. OCT Informant #1 said "that does to a certain extent let us know what's been effective or where members are engaging in ongoing professional learning that might be related to KMb in transforming practice." The informant acknowledged a greater need for targeted efforts,

> But I wouldn't say that it's probably as robust as it could be, but again, our practice has been more focused on mobilizing the knowledge and less about did we hit the mark, which probably is something that we should turn our attention to. (OCT Informant #1)

The informants shared positive results of their efforts to obtain feedback with diverse stakeholder groups. The informants in this study admitted, however, that no short- and long-term measures of impact were in place to assess KMb efforts. As measures of impact remain weak and unclear, this can affect the understanding of what is working and limit the ability to make evidence-informed program improvements and decisions.

What challenges do these organizations encounter in mobilizing knowledge and how do they address these challenges?

Assessing impact

Impact is the area of greatest challenge for education organizations. As OCT Informant #1 observed, assessing impact is important in learning which strategies are working and understanding the intended impact. OCT Informant #1 noted:

> I think we need to look to examples of really accessible KMb strategies or projects and promote those more, reflect on them, and see what were the principles that underpinned it and made it successful. I think the advice would be to myself, but also other organizations, is look at successful projects and see what you can borrow from the structures that are within them [*sic*].

One strategy mentioned here is to look at successful projects in order to garner lessons learned and glean guidance about how to replicate existing practices and structures that work. Keeping impact and successful strategies at the forefront is key, as one OCT informant stated, whether it is through conferences, symposia, or meetings:

> What are we doing? What research is out there? What is informing practice and … connecting those various communities? We have individuals who are researchers. We have individuals whose research would have a real impact. I think continuing to connect those groups is key in looking for the natural networks where that can happen. (OCT Informant #1)

Essential components are networking, communicating, and relationship building with the "right people," a process that also requires self-reflection. OCT Informant #2 encouraged asking the following questions as part of self-reflection:

> You have to have the list of questions. What is it that you want to achieve? Who is it that you need to achieve it? How are you going to get that information, and how best are you going to implement it?

While participants called for a greater investment in measuring impact, most seemed unclear about how to strengthen these efforts.

The findings suggest that, in general, measuring impact is an underdeveloped area in the field of KMb, with a lack of knowledge about how to approach measurement. In order to measure impact, the senior leadership at P4E and York U recommended "telling the story of impact." This method of understanding impact speaks to the multiple complex channels through which research use happens.

Incentives, reinforcement, and promotion

When research use is tied to the promotion process for senior staff and administrators, there is a greater chance of uptake. TDSB Informant #2 observed that recently promoted principals tend to be more adept at using the data because it is a requirement in the promotion process at the board. In order to get promoted, principals are required to prove their abilities to use evidence to inform decision-making in their instructional and leadership practices. As this is a more recent requirement, principals who were promoted many years ago generally tend to be less accustomed

to making decisions on the same basis. While research use in this context is primarily about student-achievement data, the nature of KMb is also quite different. Similarly, there were no signs of formal rewards or reinforcement to support KMb work at the OCT or P4E.

Conversely, faculty members at universities are not mandated to engage in KMb. It is often because of funded projects that faculty are required to have a KMb plan. At York U, there is also no requirement for any of the researchers to access support from the KMb Unit. The university promotion and tenure process for faculty tends to reward "academic currency" (York Informant #2), such as conference papers, peer-reviewed articles, and excellence in teaching.

An alternate viewpoint is one that questions the value of placing such incentives on faculty. York Informant #1 weighed in on the merit of tenure and promotion that values KMb. If truly dedicated to advancing KMb efforts, organizations may consider awards and reinforcements to support internal KMb efforts. This study includes four different kinds of education organizations. The nature and type of suitable reinforcements will, of course, vary according to their differing mandates.

Partnerships

Another identified barrier to KMb is the ability to work effectively with partners. Partnerships can be a means to facilitate KMb efforts, primarily through mediation and brokering strategies. P4E prides itself on developing strong partnerships across the sector, including with government, civil society organizations, and funders. P4E has encountered many successes by focusing its attention on building partnerships across the sector. However, organizational cases in this study acknowledged that efforts to build partnerships can be rife with challenges. A York U informant reported on the challenges of funding, collaborations, and partnerships:

> Our current funding programs do not easily fund academic partners, and if we accept that our partners are critical mediators of impact, then we must assign ways of working with partners that rewards them for the work that they are doing. And right now what our researchers do is they don't put them on as co-applicants, they put them on as collaborators or partners. So we don't have a culture of creating authentic partnerships. (York Informant #1)

A commitment to developing networks and partnerships is an aspect that participants believe supports KMb success. The OCT tries to develop networks based on recommendations from its members or the public. OCT Informant #2 observed, "I think the fact that we are committed to dialogic processes that are highly democratic and that really open pathways and doors for people to actually identify what they need and suggest opportunities for KMb." The OCT maintains partnerships with community colleges, universities, school boards, different professional organizations, and regulatory bodies. OCT Informant #2 believes in the importance of "fostering the leadership of the membership in order to enable them to take leadership and ownership in terms of KMb, and inviting parents and stakeholders [to do the same]." The OCT uses diverse processes to engage individuals in the co-creation of knowledge.

KMb is an integrated service delivery model at the TDSB. The partnerships, according to TDSB Informant #3, have had a tremendous impact on encouraging the use of research, particularly in the board's partnership with the ministry. An interviewee noted:

> The whole world is moving more and more to integrated service delivery. We have examples of that in the TDSB and we're doing the research around it and we're supporting that research, because ultimately that will be a direction that will help the province. (TDSB Informant #3)

Considerations such as the constantly evolving nature of partnerships also require responsiveness to social and political factors external to the organization. At points of change, TDSB Informant #1 suggested critically examining milestones and regression points over a four-year period in order to recover and strengthen action plans.

While efforts to build partnerships were evident across the four cases, apart from York U's KMb Unit, there was not always a clear connection to mediation and brokering functions. P4E quite clearly develops partnerships within education and across the sector with intentional brokering strategies in place. The TDSB demonstrated an interest in fostering partnerships in order to have an integrated service delivery model that shares and uses research. The OCT primarily partners with other similar regulatory bodies nationally and internationally on best practices for professional practice.

Discussion

Ultimately, the goal of most education stakeholders is improving outcomes for children, youth, and communities through more effective development of policies, programs, and services. Across the cases, impact was an underdeveloped area, with a prevailing lack of knowledge in the field about how to engage in measurement in a way that moves beyond counting outputs. The limitations of seeing the immediate impact of research use have been well documented by researchers (Davies & Nutley, 2008). In addition to limitations in measuring the impact of evidence use, it is important to note the different forms that use can take. Measuring impact is an area identified as needing considerable attention; greater focus; and increased learning, practice, and action. However, the conceptual and instrumental functions are perhaps the most challenging to measure, understand, and navigate. Organizations may lack the supports necessary to approach the recommendations proposed by Davies and Nutley (2008).

Altogether, from the literature, the barriers to KMb cover a range of potential challenges to facilitate research impact. In sum, these barriers can vary according to the organizational context and current social and political pressures. Further, dedicated resources, including financial and human, are required to support the formal and informal processes through which impact measurement is developed and established. Understanding the common challenges to measuring impact can facilitate the development of strategies to minimize those challenges. Within a broader social and political context, these challenges need to be considered with respect to organizational mission, culture, and capacity.

This study acknowledges the influence of social and political factors and recommends that organizations develop tools and processes to measure the conceptual and instrumental impact of their KMb efforts, which go beyond simple measures of outputs. Greater efforts made toward collaborating with partners and cross-sectoral stakeholders may improve measurement practices. The study recommends that organizations give greater attention to defining measurement criteria, selecting an appropriate evaluation framework, and building in evaluation throughout KMb efforts.

Taken together, the aforementioned focus areas can help organizations integrate KMb strategies with organizational processes and functions. Other efforts that can support developing measures of impact include identifying the key components for stakeholders to consider, understanding research use in user communities, and evaluating initiatives aimed at increasing research use (Davies & Nutley, 2008). Although the proposed areas sound practical, the actual prioritization and implementation require dedicated efforts.

Collaborative approaches are some ways that organizations in this study believe they are enhancing democratic practices. Although the organizations differ in their mandates, there was an altogether common fundamental and general commitment to connecting research to policy or practice. This could be mitigated by involving different groups of citizens in research agenda setting that reflects diverse perspectives while honouring democratic values (Gough, 2007).

Website

Google Analytics, https://analytics.google.com/analytics/web/provision/#/provision

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Appendix 1: Interview questions

Part 1: Knowledge Mobilization (KMb) approaches and activities

- What is your title/role in your organization?
- Please describe your involvement in knowledge mobilization efforts in your organization.
- Please describe the purpose, vision, and mission of your organization's knowledge mobilization work.
- What target audiences is your organization seeking to engage through its KMb efforts?
- Why does your organization engage in KMb?
- What strategies is your organization using to advance KMb (e.g., products, events, networks, capacity building etc.)?
- What strategies do you consider to be the most effective in your organization?
- Have these strategies changed/developed in the last few years? How? Why?
- What evidence, if any, does your organization collect on the impact of KMb strategies?

Part 2: Organizational factors affecting KMb

- In your opinion, what factors contribute to the success of KMb efforts by your organization (e.g., dedicated leadership, organizational culture, interactive strategies)?
- Please describe what organizational capacity and resources specific to KMb exist in your organization.
- In your opinion, what are the barriers to knowledge mobilization efforts by your organization (e.g., capacity, resources, organizational supports, etc.)?
- How does your organization address these challenges?
- What advice would you provide other organizations engaging in KMb work?
- Any other comments? Questions?